Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. 2. NEW YORK, JUNE 19, 1847. NO. 39.

THE NEW YORK

SCIENTIFIC AMERICAN:

PUBLISHED WEEKLY.

At 128 Fulton Street, New York (Sun Building,) and 13 Court Street, Boston, Mass.

By Munn & Company.

The Principal Office being at New York.

TERMS:—$2 a year—$1 in advance, and the remainder in 6 months.

☞See Advertisement on last page.

POETRY.

THE LITTLE CANDLE.

BY REV. HENRY BACON.

Cheerful the little work-girl sat,
And swift her needle flew,
While the dark shadows of the night,
Their gloom around her threw.

A little light alone was hers,
As there she sat and wrought,
And well she knew how well to prize
What her own toil had bought.

"I must be quick," she musing said,
"My little candle wanes;
And swiftly must my task go on,
While yet its light remains."

And then she plied with wondrous skill
The little shining steel,
And every ray of that small light,
Smiled on her patient zeal.

Ere the last glimmer died away,
Her task was neatly done;
Sweet was her rest—and joy to her
Came with the morning sun.

Ah, is not *life* a little light
That soon will cease to burn?
And should not we from that dear girl
A solemn lesson learn?

While yet that little candle shines,
Be all our powers employed;
And while we strive to do our tasks,
Life shall be best enjoyed.

But let us ne'er in darkened hours
Forget what Christ hath done,
But patient, in sweet hope, await
The glorious RISING SUN!

INS AND OUTS.

I'm out of cash, and so, of course,
I've pocket room to let;
I'm out of patience, just because
I'm never out of debt.
Besides, I'm dreadfully in love,
And more than half in doubt
Which is the greater evil, that
Of being in or out.

"I'm deeply in my tailor's books,
But I don't mind a dun:
And if I wasn't out of funds
I'd pay him out of fun.
He always gave me "fits" he said,
But heaven bless his eyes!
'Twould put *him* in a fit, I guess,
He'd been in such surprise.

I'm out at elbows, in distress,—
Ah! mine's a sorry tale!
I'm out of favor, out of sorts,
And certainly must fail.
My landlord says my *time* is out,
And thinks I'd better "skin,"
I'm such an "out-and-outer," he
Wont have me in his inn.

I'm out of office, but in hopes
To get put in some day!
If I don't "run" for something soon
I'll have to run away.
I'm out of spirits: and I'm out
Of more than I can think;
I'm out of temper; hang the pen!
I'm out—I'M OUT OF INK!

HUDSON'S ROTARY ENGINE.

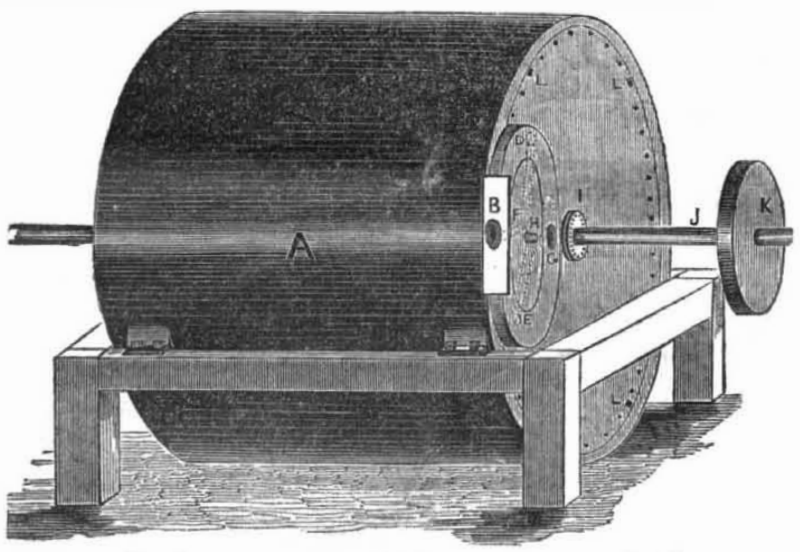
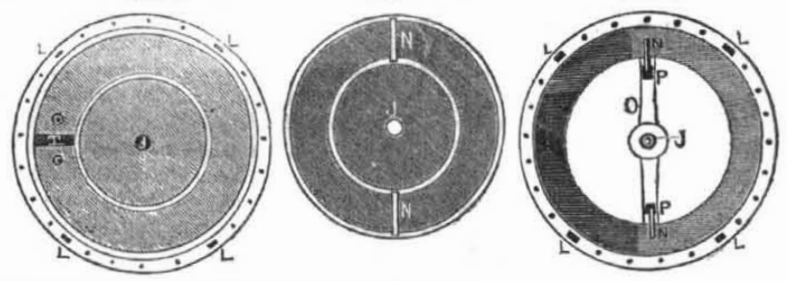


FIG. 1. FIG. 2. FIG. 3.



Mr. Sidney Hudson is the inventor of the above engine, which in some points is entirely different from any other which we have before presented to our readers. That it is a superior engine is not for us to say. The Scientific American is now the great vehicle whereby the inventions of the United States, and we may say the world, are carried from one end of our continent to the other, and the objects on which the active minds of our mechanics are engaged, are exhibited here for the examination of all There can be no doubt but that many minds are occupied with inventions that have already been laid aside as useless, which had they been made known generally, as inventions now are by our paper, a great amount of thought and labor would have been saved or directed to some other object which might be original and beneficial.

EXPLANATION.—Ground plan A, is an iron casing of the whole engine. B is a flange which connects the steam pipe with the engine, the steam entering through the channel F and the dotted channels to the steam valves E D, which are used for reverse motion. G is the exhaust opening. I is a stuffing box round the shaft J. K is merely a central representation for a coupling box. L represents four screw bolts for screwing up tight into their flanges the separate discs represented in figs. 1, 2 and 3, a description of which—they being sectional views—will be more explanative of the whole.

Fig. 1, is a stationary shield. D E are the steam valves. Fig. 2 is the moveable disc, fitted steam tight on fig. 1. N N are moveable pistons like wedges, which act in the capacity of valves. Fig. 3 is also a stationary disc, bolted tight by the screw-bolts to fig. 1. It is open in the centre, with a bevelled rim, on which the wedge pistons N N bite round the whole circle by being fitted on the rim by a notch in each, and as they reach the elevated part of the rim each in succession is lifted up and the steam passes underneath and escapes by the exhaust valve.

Suppose fig 1 to be stationary, and let fig. 2 be fitted into it with fig. 3, and the whole packed and screwed up steam tight. Let the steam then be turned in by the steam valve D, and the chamber of fig. 2 is filled (as the wedge pistons divide the cylinder.) The shield, fig. 2, is then forced round until the piston comes to the elevated part of the rim, fig. 3, when the piston is lifted and the steam passes under and escapes through the exhausting valve G, in the ground plan, and just as the one piston is elevated the other is down and the steam is constantly filling one chamber and the rim lifting the piston and exhausting the other.—The letters P O J, represent the elevated fixtures of fig. 3, to which the pistons are fitted for the purpose of moving on the bevelled rim and forcing them to sink when past the lifting bevel.

The great and just objections to all rotary engines, have been principally owing to their general incapacity of exhaustion. The inventor of the above is but a youth, from distant Michigan. He resides in the village of Milford, and his engine shows how active and universal is the mechanical genius of our people. A model of this invention may be seen at this office.

New Mode of Calculating Time.

"Governor," said Col. S., meeting a very agreeable gentleman, who goes by that sobriquet, "will you take a drink this morning?" "Thank you Colonel, I will, for I have not taken any for three days." "Why I drank with you myself last night." "Oh!—ah,—yes,—but I mean three days, counting to-morrow, next day, and the day after."

A little boy just beginning to read Congressional news, asked his father if the members of Congress were all deaf and dumb? He thought they were because they made so many *motions*.

A Friend.

The most agreeable of companions is a simple, frank man, without any high pretentions to an oppressive greatness; one who loves life, and understands the use of it; obliging—alike at all hours: above all, of a golden temper, and steadfast as an anchor.

"Yes, ma'am that is a crack article," said a storekeeper to a lady purchaser. "Oh mercy," cried she, "if the thing is cracked I dont want it."

It is a remarkable peculiarity with debts that their *expanding* power continues to increase as you *contract* them.

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending June 12th, 1847.

To Richard Walker of Portsmouth N. H. for improvement in machinery for Cutting Files. Patented June 12, 1847.

To Jessee Leavins of Springfield, Mass., for improvement in Sash Machinery. Patented June 12, 1847.

To Isaac H. Hershey of Hagerstown, Md., for improvement in Composition for Currying Leather, Patented June 12, 1847.

To Danl. Tomlinson and H. S. Hopkins of Brookfield, Conn. for improvement in fire alarms. Patented June 12, 1847.

To James R. Stafford of Cleveland Ohio, for improvement in Boilers for Culinary purposes. Patented June 12, 1847.

To J. W. Thatcher of Danville, Penn, for improvement in Cooking Stoves. Patented June 12, 1847.

To Benjamin Chambers of Washington, D. C., for improvement in Bank Note engraving. Patented June 12, 1847

To Peter Collyer of Hunter, New York, for improvement in Fruit Gatherers. Patented June 12, 1847,

To Nathaniel Whitmore of Lynn, Mass., for improvement in machinery for making Cap Tubes. Patented June 12, 1847.

DESIGNS.

To Elihu Smith of Troy, New York, for Design for Stoves. Patented June 12, 1847.

To Allen S. Wallace and James S. Lithgow., for Design for Stoves. Patented June 12, 1847.

The Young Idea Harpooning.

The Monthly Rose tells the following very good story of a young whaler in Nantucket.—No wonder the hardy seamen of that island can handle a harpoon with such singular dexterity, when they begin to practice so early in life:—

"Passing through Nantucket, we stopped at an out-of-the-way house for a glass of water. As we approached the half-open door, we beheld the following scene, which excited our risibility to a considerable extent. An urchin some six years old, had fastened a fork to the end of a ball of yarn which his mother was holding, which he very dexterously aimed at a black cat quietly dozing in a corner. Puss no sooner felt the sharp prick of the fork, than she darted off in a jiffy, while the experimenter sung out in high glee, "*Pay out, mother, pay out; there she goes through the window!*"

English Travellers.

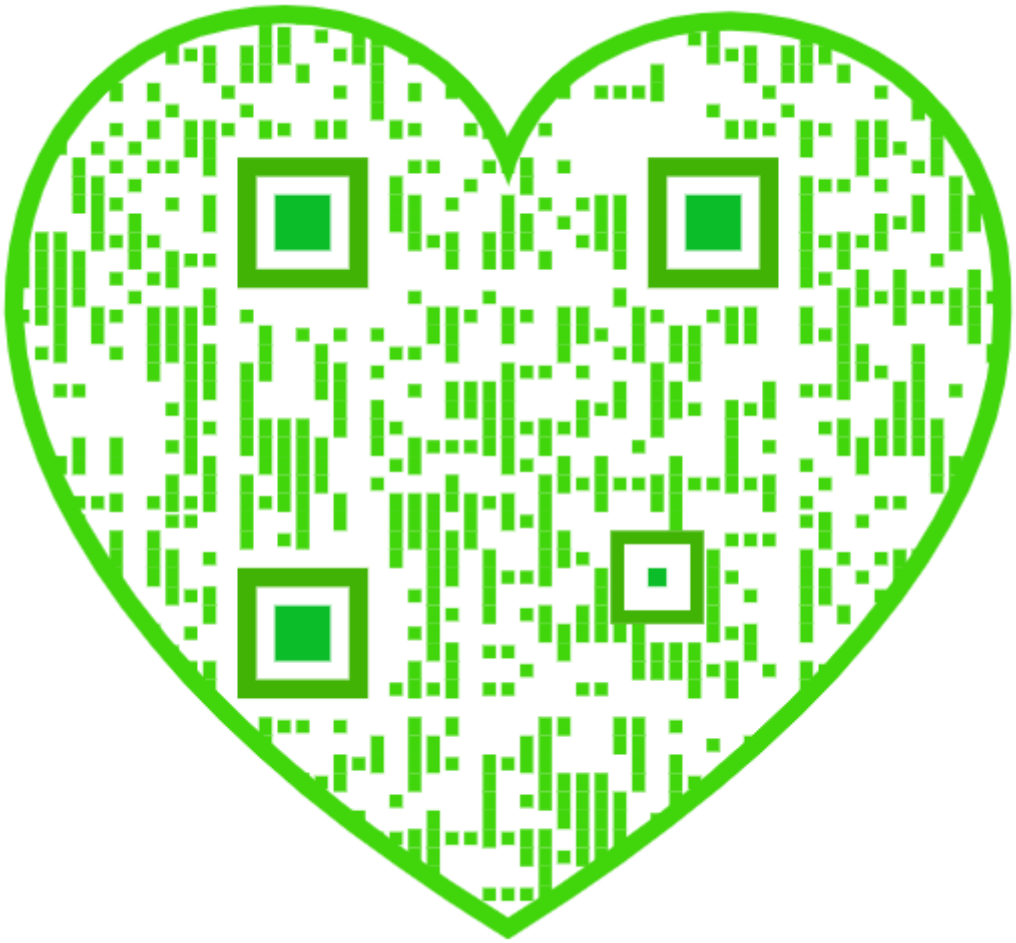
I was somewhat amused, says the author of a recent work entitled "Views Afoot," at seeing a splendid carriage with footmen and outriders, crossing the mountain, the glorious landscape full in view, containing a richly dressed lady *fast asleep!* It is no uncommon thing to meet carriages, in the Highlands in which the occupants are comfortably reading while being whirled through the finest scenery. And, *apropos* of this subject, my German friend related to me an incident. His Brother was travelling on the Rhine, and, when in the midst of the grandest scenes, met a carriage containing an English gentleman and lady, both asleep, while on the seat behind was an artist sketching away with all his might. He asked the latter the reason of his industry, when he answered, "Oh, my lord wishes to see every night what he has passed during the day, and so I sketch as we go along!"

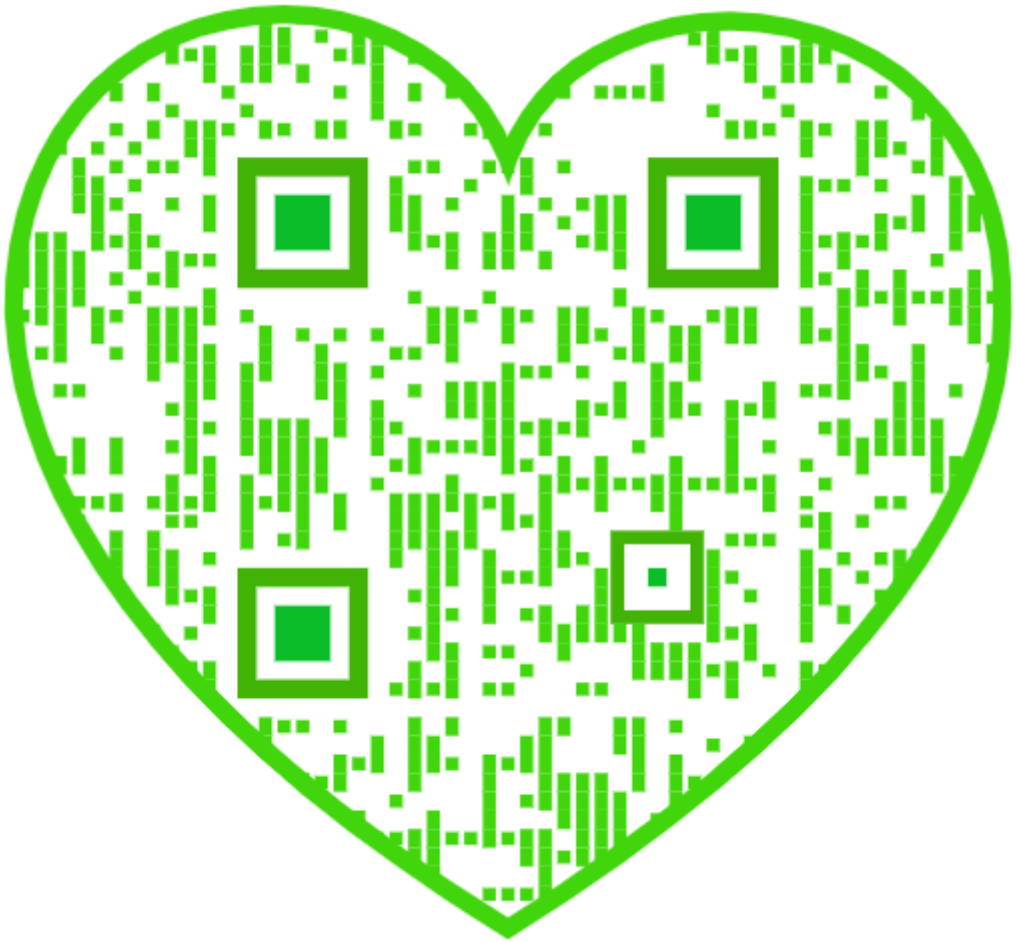
The Power of Suction.

A lady in writing about her lover, says in the most charming manner imaginable—

——"He drew
In one long kiss, my whole soul through
My lips, as sunlight drinketh dew."

© 1847 SCIENTIFIC AMERICIAN, INC





Important Decision.

A decision has just been given by Judge Parsons, in a case in Philadelphia, of which the facts are briefly these:—"Holden and Mc Mackin were equal partners in the ownership and publication of the Saturday Courier. Holden died. His widow claimed one half of the establishment, by right of her husband's ownership This McMackin resisted, on the ground that the good will of an establishment could not pass to the heirs of a deceased partner. He offered to buy the widow's interest at $15,000; or to sell his half for $22,000—thus estimating the good will of the establishment at $44,000 which he was not willing the widow should have the benefit of. The offer was declined, and suit was brought; and his honor decided that the widow could recover remuneration for the good will of the Saturday Courier. By this decision, if the matter cannot be settled in any other way, the office will have to be disposed of at public sale, and the proceeds divided equally between the plaintiff and defendant."

How to treat Lard.

The trying of lard is an important branch of economy, requiring a little care and some direct information. Water be it remembered, should never be made use of in this process, since it cooks the fat and makes it soft and liable to become speedily rancid. Put the lump fat in a pot, and then stand the pot along side of the fire, gathering around it a few embers; let a little of the fat try out, after which, put the fat over the fire; with such precaution there is no danger of the lard's scorching, and no need of water, but the lard when fully cold, will be found quite firm and solid, which cannot be the case if water be made use of in the trying out.

New Method of Sewing Boots.

A boot maker in Paris has taken out a patent for the right of using brass wire for sewing the soles which does not admit either moisture or dust.

We have seen the above extract copied extensively and have only to say, that about fifteen years ago, we knew a country bootmaker who often sewed his boots with brass wire and thought no more of taking out a patent for his invention, than the man in the moon.

Application of Ether for Insanity.

Dr. Gazenova, head surgeon of the lunatic asylum at Pau, has tried the use of Vapor of Ether, or, as is sometimes called, Anodyne Vapor, on a mad girl. This poor creature had been unable to procure sleep for five months. She was made to inhale this Vapor, and her agitation soon ceased. After five inhalations, she fell into a complete state of insensibility, which lasted twenty-five minutes, at the end of that time the torpor ceased, and no symptoms of disorder remained.

Telegraph under Water.

The electric telegraph from Portsmouth, England, to the Isle of Wight, has been found to succeed admirably, on a trial, with even only one wire laid down under water. We heard that the telegraph on the Philadelphia and Baltimore line passes under the waters of Gunpowder river and operates also successfully.

Cherokee Literary Institutions.

The sites for two literary institutions in the Cherokee Nation, provided for by the Cherokee Council at its last session, have been chosen. The Advocate says they are to be 80 feet square, constructed of brick, with a foundation of stone. School, dining, and sleeping apartments, &c., all to be in one building. It is intended they shall accommodate 100 pupils each.

Bees.

Bees should not be kept on the south side of a wall or building, but on the north side If kept on a southern exposure, they will be tempted to leave their hives while the general atmosphere is yet cold, and perish before they can return.

The Minerals of Mexico.

No country in the whole world has as rich mines of gold and silver as Mexico. The pure gold mines, however, are not numerous, gold being generally found mixed with silver We are certain that if the Mexican mines were well worked, thirty millions of gold and silver would be the annual product. If gold and silver were as plenty as iron and lead, a wonderful impetus would be given to our manufactures, as gold and silver would be employed to great advantage in some parts of machinery for which composition metal is now used. These metals would also be more generally used in chemistry and confectionary. Just let us suppose gold to be as plenty as brass and what a revolution in science and art would be the result. The trappings of royalty would then cease to be measured by gold, and the glittering crest might be as easily mounted by the peasant as the peer.

Food Riots.

Food riots were common all over England Scotland and Ireland. We do not wonder at this, for the prices have risen there to such a height that it is impossible to purchase food by any class but the most wealthy. The prices have been forced up by British speculators to such an extent that the wrath of the people can no longer be restrained. The Liverpool and Glasgow store houses were full of all kinds of provisions, but the avaricious speculators were feasting on the groans and tears of the starving and dying.

Splitting Saws.

A very great improvement may be made in the common hand splitting-saws, by commencing the teeth at the front of the saw rather small and increasing the size of the teeth gradually as they approach the handle, at which end they may be nearly twice the size of common sized teeth. If saw manufacturers would consider and adopt this method, they would no doubt, confer a great favor on carpenters, if no other class of mechanics. That such saws must be better than the common kind, we think can be plainly seen. In the first place the common saw will cut twice as much on the half next the handle, and has no inclination to suck, catch, or twist, as it has near the point, and the same impetus given with teeth increasing in size, must do greater execution.—*Mech. Jour.*

New Oyster Bed.

A bed of oysters has been discovered at a short distance from Catania, in Sicily. They are small but succulent, and among them are some which a committee of naturalists pronounce to be a species known to the Romans, and which in the time of Cicero were called the ears of Venus.

Advance of Tolls.

The Reading Rail Road Company have given notice that on the first day of July next the rate of tolls on coal brought over their road will be advanced ten cents per ton above the present rate, and that an advance of ten cents per ton will be charged on each successive month.

Hints about Food.

Roast meat contains nearly double the nourishment of boiled, but boiled meat is better adapted to weak digestion. Frying is one of the very worst methods of dressing food, as boiling is one of the best. Baked meat has a strong flavor, is deprived of some of its nutritious qualities, and is difficult of digestion.—Spices, sauces, and melted butter should never be used by an invalid.

All may Learn.

A little girl went to the study of a learned philosopher for fire. 'But you have nothing to carry it in,' said he. The girl took up some cold ashes in her hand and placed the live coals upon it. The philosopher threw down his book, exclaiming, 'with all my learning I never should have thought of so simple an expedient!"

Curious Effect of Contrast.

There are certain shades of blue, which, when placed in contact with bright red, or scarlet, have a singular effect on the eye of the spectator. The contact edges appear to be in constant motion, so that it is difficult to designate the line of division between the two colors.

The Mining Journal and American Rail Road Gazette.

The first number of this Journal is now on our table and we hail its appearance with no small feelings of joy and hopes of success to its enterprising proprietors. It is the exact counterpart of the famous London Mining Journal and the appearance of this paper speaks well for the rising importance of our mineral trade. It is devoted to Mining and Rail Road interests. It is both scientific and practical and promises to be a most invaluable record of Mining and Rail Road statistics. It is published by J. E. Grant at the office of Hunt's Merchants Magazine, No. 142 Fulton St., price $3 per annum, and issued semi-monthly. Let no person think the sum too much as it is an exceeding large quarto.

Accident from a Fluid Lamp.

Miss Mary Watson was burned to death in Philadelphia last week, while attempting to fill a fluid lamp when it was burning, and the liquid taking fire caused the catastrophe. Her mother and brother, who were in the room, were also badly burned in attempting to save her.

Cost of Monarchical and Republican Governments.

In looking over the statistics of Great Britain and the Great American Republic, we perceive that the cost of our government is about $3 per head, while that of Britain is $12,33. These are the peace expenses. In war the tax of both nations is nearly triple this amount. Great Britain expends $340,000,000 per annum. The Queen Dowager of England, has a pension $425,000 per annum. The Lord Chancellor of England get $115,000, four times more than the President of the United States.

A Large Casting.

On last Saturday afternoon the 14th, Messrs. T. F. Secor & Co., of this city moulded the Bed plates for the engine of the new Steam Ship United States, one of the four packets to run between New Orleans and Liverpool. The casting weighed over 24 tons The most of the metal was from Irondale, Pennsylvania, with a slight mixture of Scotch pig. The engines are to cost $115,000. These steamers are to be 2,200 tons burden. The United States is to have two side-lever marine engines, of 82 inch cylinder and 9 feet stroke, each of the power of more than 1000 horses.

The Tribune says, could Robert Fulton but have lived to see our day, and he would not have been a very old man, he would have gone down to the tomb full of honors more solid and lasting than ever decked the triumphal car of a conqueror.

The Children of Lafayette.

"The spirit of the father is beaming in the son." George Washington Lafayette is a member of the French Chamber of Deputies, and at the last election, Oscar, the grandson of the old republican hero and patriot, was elected to a seat beside his virtuous and noble father, who inherits the name of the immortal Washington. Thus the children of the mighty dead are nobly sustaining by their virtue and patriotism, the fame of their fathers. They both sit among the liberal members.

A Simple and Correct Barometer.

Get a small glass tube twelve inches long, fill it half full of alcohol, which should be colored with some alkanet root. Then apply a gentle heat to the bottom of the tube to expel the air, which when done, hold the open end of the tube to a blazing candle and close the opening. The tube is then hermetically sealed and the alcohol like mercury will rise and fall with the degrees of temperature. This is a far better barometer than can be made by any elevated bottle or vial and about as easily constructed.

A Gift.

Albott Lawrence, of Lowell, Mass. has made a donation of $50,000 for the purpose of erecting suitable buildings and endowing Professorships in the University of Harvard. The new department is to form a school of Practical Science. The donor specifies three branches, viz. Mining, Engineering and Machinery.

Several importers of Linseed Oil from London and Hull, have found the article largely adulterated with oil of resin, a cheap article, and ruinous to the qualities of the linseed oil.

LATE FROM MEXICO.

An English Courier had arrived at Vera Cruz from the City of Mexico. He stated that 12,000 Mexicans were engaged on the fortifications of Rio Frio. Gen. Alvarez had 10,000 men under arms tn the vicinity of the capital. The courier also reported that Santa Anna was not so much in disrepute as had been supposed, but that he had been elected President on the 5th May and declined.

The rumor of a great portion of General Worth's force having been cut off, is unfounded. The capital was a scene of utter confusion when the courier left, and the whole country from Vera Cruz to the imperial city had been laid waste and the peaceable disposed inhabitants driven off by maurading bands of guerillas.

The Mississippi regiment parted with Gen. Taylor to return to their homes, their term of service having expired some time ago. As the men marched past him with much demonstration of affection and respect, he attempted to address them but was overpowered by emotion and with tears streaming down his furrowed cheeks, could only say—" Go on boys—go on —I cannot speak."

Rocking Stone.

The last number of the Barre Mass. Patriot contains an engraving representing, what is commonly called a Rocking Stone, situated in the western part of that town. It is a double rock, nearly ten feet high, resting on a ledge of the same kind, with a base so small that the whole mass at a little distance appears to be capable of being moved by a very slight force. There is also one of a similar kind near the village of Fall River, supposed to weigh 140 tons, which is so exactly poised on its centre of gravity, that it can easily be moved with one hand.

Vessel building at Essex.

The Gloucester Telegraph says that " twenty-five Schooners, averaging sixty tons, and one Brig of one hundred and fifty tons, have been built at Essex, the present season There are now on the stocks, and nearly ready to be launched, one Brig of about two hundred tons, and five Schooners making, in round numbers, about twenty-one hundred tons built this Spring. Reckoning that amount of tonnage at $34 per ton, the average price paid by the purchasers of the vessels, we have the sum of $71,400. This is exclusive of rigging, sails, &c.

A Remarkable Cavern.

The Ledger states that a remarkable Cavern has been lately discovered in the limestone quarry of Mr. John Kennedy, in Port Kennedy, Montgomery county. This cavern is 160 feet in length and sixty feet wide, and twenty to forty feet deep. The interior shows some beautiful specimens of nature's architectural power. There are arches, piers and cornices, exhibiting almost the same regularity of workmanship as though executed by the hand of man after the strictest rules of art. When lighted, the scene is beautiful. Forty or fifty lights splendidly irradiate the scene, and gives a magnificent effect. Such a beautiful natural curiosity will no doubt attract much attention.

Whale Fisheries in Connecticut.

The district Judge, in his recent charge to the Grand Jury stated that there were engaged in this business 125 vessels, with 5000 seamen and a capital of about $5,000,000.

Novel Distress.

Silver is not a legal tendency in England. and the Barings could not some time ago raise money upon silver bullion to the amount of 60,000*l*; and neither Barings nor Rothschilds could get paper, with their endorsement, discounted by the Bank!

Hail at the South.

The Houston, Miss. Patriot of May 26, says that considerable hail fell there a few nights previous doing a great deal of damage.

The Court of Common Pleas at Cincinnati, Ohio, granted week before last twenty divorces to dissatisfied couples.

© 1847 SCIENTIFIC AMERICIAN, INC

For the Scientific American.

THE TEAR AND SIGH.

BY R. MACFARLANE.

Fair Lady, if a single sigh,
Bursts from thy heaving breast,
If but one tear bedims thine eye,
For those that are distressed,

That tear, it is a brighter gem,
That sigh is sweeter far—
Than India's brightest diadem,
Or incense of Shinar.

As oft I hear a heartfelt sigh,
Or see a falling tear,
I fain would to that bosom fly—
A kindly heart is there.

But I would wish to see thee smile,
And wear that smile forever,
May neither grief, nor care nor guile,
Lodge in thy bosom ever;

And may thy life be sunny bright
Without a cloud of sorrow,
Full happy to lie down each night—
Rise happier on each morrow.

Currents.

In the Baltic Sea, there is an upper and under current, running in opposite directions, a fit emblem of the men and customs of our country, in former times, and of the present day; the under current representing the happy simplicity and virtue of our pilgrim fathers, and revolutionary patriots; the upper, the inconsistency of many modern men, times, and practices.

The man who studies the laws and operations of unerring nature, and drinks clearly at her crystal fountain, enjoys a happiness, purer and nobler, than that drawn from many of the highly varnished schools of the present luminous era In the days of Penn, Franklin, and Rittenhouse; industry, a clear head, a matured judgment, and a good heart; with a good share of what the modern *literati* are pleased to term, a *common* education, were the best recommendations and surest passports to public esteem and promotion. Now, in view of very many, a *liberal* education forms the legitimate stepping stone to the pulpit, the legislative hall, and the temple of frame. The primary landmarks of common knowledge and common sense, are, in view of many, lost, in the blaze of light, shed upon our country, by the luminaries of newly invented systems of science. The under current of practical intelligence, fit for every day use, is sinking deeper and lower, beneath the foaming torrent of the upper current, formed of fashionable and polite literature. A sermon or public speech, to be acceptable to some modern *ears*, not *hearts*, must be trimmed like a Parisian bonnet, with all the ribbons of a fancy, and flowers of rhetoric; good sense and sound logic being a secondary matter. A few roses, culled from the dead, or foreign living languages, render it still more palatable. The waters of theology, have become so deep, so filled with snags and brushwood, that common fishermen can no longer labour with success. A man is no longer fit for the legislative hall, for the bar, or any of the *learned* professions, unless he has mastered the classics and all the science, except the sense of common business and common sense, without which, he is a splendid ship without a helm.

When the mechanic shop, the counting house, the plough, the distaff, and the kitchen—fall into disrepute, and are submerged by the upper current of fashionable accomplishments, vain show, pomp, and parade; the sun of our country's glory will set in gloom. When the republican simplicity of Greece and Rome receded before high classical literature, imported luxuries, and rules of etiquette—when they ceased to call men from the plough, to the cabinet and the field; when the woman exchanged the kitchen for the drawing room: corruption surplanted virtue; the genius of LIBERTY veiled its face and fled; dissolution followed—ruin closed the scene.

Tight Lacing.

A learned doctor, referring to tight lacing, avers that it is a public benefit, inasmuch as it kills all the foolish girls, and leaves the wise ones to grow to be women.

Glass,

The manufacture of glass, is one of the very highest beauty and utility. It is said to have been first discovered by the Phœnicians. Liebig says, "that we are indebted to it for many wonderful improvements in Chemistry." Pliny says that the Indian glass was made from native crystal. Phœnician glass was made of light dry wood, with nitre and copper, and shells and pebbles, tinged with different colors. Sometimes it was blown into shape, and sometimes ground on a lathe. Sidon was famous for its glass manufactures, and mirrors were first invented there. In Pliny's time, glass was made in Italy of fine sand on the shore between Cumae and the Lucrine bay. Nero gave about $250,000 for two glass cups, each having two handles. They were of immense size and of exquisite workmanship.

There is no good evidence that glass was used in windows before the third century, and then it was used only in churches and other public buildings. In England, it was but little known in the fifteenth century. It was not introduced into farm houses until the reign of James the first. Horn was used then in its place. It is now the common property of every house, high and low, in every civilized country Venice long excelled all Europe in glass manufacture, but France has since rivalled her. It was the Venetians who carried the art into England, and the first glass was made at Lambeth, in 1773. The British plate glass was first made by Frenchmen at Ravenshead. The French plate glass is still held in highest repute, although it is said that the London and Liverpool is equal, if not superior.

Splendid glass is now manufactured in America, of every shape and color. Some of the stores in this city exhibit the most splendid and largest panes of glass in the world. Fine sand, potash, lime and Flint are all used in glass manufacture. The bichromate of potash is now used in colored glass, giving a deep scarlet when the lead and lime are used in the flux. In the art of glass making, there is still much secresy maintained among the craft, and all works upon this subject differ much from common practice.

Dwellings for the Poor in Villages.

A company has been formed in London this spring, with a capital of $200,000, for the purpose of building villages in healthy situations within a short distance of the metropolis, and accessible by railways. They will consist of tasteful cottages and gardens, at from four to eight miles from London, built on an average of eight or ten to the acre, giving to each resident a good garden. The plan will afford charming residences at reduced rents, including railway fair to and from home, to persons of moderate income, who now pay comparatively high rents in crowded and unhealthy districts of the city.

Each village will be laid out in attractive style, with a church, school, lecture and reading rooms, play grounds, bath and wash houses, and such other establishments as are requisite to furnish the necessaries of life at a cheap rate and of the best quality; the rents are not greater than will be sufficient to pay a clear interest of 7½ per cent on the capital, of which 2½ will be reserved for repairs, &c., and the balance paid to stockholders. The stock is divided into shares of £5 each; this will afford a good opportunity for the tenants to invest their savings, with the solid security of receiving five per cent interest and a preference in the allotment of houses; while they will generally get their rent paid at one third or one half the amount generally paid by them, for miserable dwellings in cities. The cottages will be of different styles and prices, embracing all the improvements and conveniences of modern architecture. Provision is made for the purchase of houses by the tenants, at a small advance on cost when desirable.

Cheap Paint for Barns.

An excellent and cheap paint for rough wood-work is made of six pounds of melted pitch, one pint of linseed oil and one pound of brick dust or yellow ochre

A capital of $1,000,000 is invested in the manufacture of glass at Pittsburg.

THE WEATHER, &c.

WEDNESDAY, JUNE 9th.

	Hours, A. M.									Hours, P. M.									
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Therm.	63	63	63	63	63	65	69½	72½	75	76	77	78	78	76	73	71	71	69	68
Wires,	62½	63	63	64	65	67	·70	73	76	77	78	79	79	77	73	71	71	70	68½
	Equilibrium ended.																		
	THURSDAY, 10th.																		
Therm	65½	65½	67	70	74	76	80	81	83	83	81	80	79	77	75	72½	71	69	68
Wires,	65½	65½	67	70	74	76	81	81	82	82	81	79	79	77	75	72	71	69½	69
	FRIDAY, 11th.																		
Therm.	64	64	64½	65	68	71	71	70	68*	68*	68*	68*	68*	66½	66	66	65	66	66
Wires,	63	64	64½	65½	67	70	70	70	68	68	67	67	67	65½	65½	65½	65	66	65½
	SATURDAY, 12th.																		
Therm.	59	59	59	64	66½	69	70	71	72	73½	74½	74½	74	73½	72	71½	68	—	62
Wires,	59	59	59	63½	66½	70	71	71	72	73½	74½	74½	74	74½	72	71	68	—	63
	SUNDAY, 13th.																		
Therm.	60	60	61	65	69	75	76	73*	73*	73*	73*	71½	68½	67	65½	64½	64	62½	61½
Wires,	59	59	60	65	69	75	76	73*	73*	73*	73*	71½	68½	67	65½	64½	64	62½	61
	MONDAY, 14th.																		
Therm.	59	60	61	62½	64	69	71	74	63	64	67	69½	70	69	67	65	61	60	59½
Wires,	59	60	61	62½	63½	69	72	74½	62	63	66	68	69½	68	67	64	60	59½	58½
	TUESDAY, 15th.																		
Therm.	50	52	51	54	57	61	63*	63*	64*	63*	64*	63*	63*	62	62	60	58	57	56
Wires,	49	52	50½	53	55	60½	62*	62*	63*	62*	63*	62*	62*	61	61	59½	57	57	54½

* 7, 5 *and* 4 *hours Equilibriums.*

REMARKS.

In the Journal of the 12th inst. I recorded an equilibrium which terminated on the morning of June 4. I also recorded the same equilibrium in the Brooklyn Evening Star of June 4, with extended comments. The Buffalo Commercial Advertiser of Saturday, June 5, says that on the morning of the previous day, between 7 and 8 o'clock, the steamboat Governor Marcy run on a reef of rocks in Lake Erie, near Dunkirk, and became a wreck. A fog existed at the time This is the sixth steamer that has been wrecked upon the rocks during the last two years, all of which were attended by distant earthquakes except the last, and sufficient time has not yet elapsed to hear from distant places, and besides the convulsion may have happened where no newspaper is published. The usual attendants of an earthquake convulsion were witnessed and recorded and the record published. June 9, sprinkle of rain at 6 P. M. June 10, strong wind blowing at 7 P. M. 11th, black cloud in S. W. at 4 A. M. and broken clouds N. and E. Rain at 10 A. M. to 1 P. M., and in the evening lightning in the far West. Rain at Baltimore at daylight. 13th, sprinkle of rain at 12 M., high wind at 1 P. M., clouds and fog at 5 P. M, rain at 30 minutes past 9 P. M., thunder and lightning during the evening but distant. 14th, dark cloud in the S. W. at 45 minutes past 3 A. M., a little rain at 6, at half past 11 A. M. a very black cloud in sight, distant thunder, hail fell mixed with rain; at 11 30, wires and thermometer both at 73; at 11.36 wires 68, thermometer 69½; 11.40, wires 65, thermometer 65½; 11.45, wires 62½, thermometer 62; 11.50 wires 62, thermometer 62; 11.55, wires 62, thermometer 61 Fall of rain two ounces in a tube one inch square, equal to 18 lbs. of water upon the foot of surface.—Squally and windy during the rest of the day. During the storm several electric discharges took place. The depression of the wires during the 25 minutes which the storm lasted was 11 degrees; thermometer 12 degrees. The saline pool in which the wires terminate has been intensely black the last 24 hours. 15th, frigid clouds in S. W. and W. at 4 A. M The atmosphere colder here than any morning at the same hour in June 1846. The wind blew a gale all day. E. MERIAM.

Brooklyn Heights, June 15, 1847.

Construction of Magnetic Wires.

(*Concluded from No.* 38.)

The account in the Scientific American of last week, of the breaking out of a volcano on the 9th of April, followed by an earthquake on the 11th of the same month, compared with my records in the Scientific American of tne 17th of April, affords a convincing proof of the accuracy of the observations. Long Island, on the south-western shore of which is my place of observation, is 140 miles long from south-west to north-east, and from 12 to 16 miles wide. It is washed by the broad Atlantic on the south and on the north is separated from the continent by the East River and Long Island Sound—it reposes on a rock, and is, therefore, like a great terrestrial needle and runs in the great electric current lengthwise and has not many water courses. It presents, therefore, to the lightning storms a uniform atmosphere. The erection of the wires I remarked, was for protection from lightning —the copper points, tin tubes and salt water termination, in my humble judgment, rendering them perfect and absolutely safe conductors—the second proceeding of connecting the spirit tube with the wires was for the purpose of making this thermometer more sensitive—metals being better conductors of heat and cold than air and communicating changes more rapidly—this is illustrated by the use of wooden handles to fire toasters, &c. The connection of the loadstone with these is an improvement made from the impulse of a suggestion of the mind. My magnetic spindles are not affected by electricity—that is, I have never been able to discover any change whatever during thunder storms. In summer I use a grape vine at the wires, which winds its tendrils close around the rod and no considerable discharge of lightning from the clouds could, in my judgment, pass down the rods without scathing the tendrils. It will be seen by my statement that I connect the earth, the air and the water together by a metallic conductor—that three metals are also brought into contact—that the loadstone is so placed as to give the wires the attractive and repulsive forces. My records are printed in great detail in the Municipal Gazette, and should your correspondents desire a copy, I will gladly forward it to their address by mail. As my records cever 19 hours out of 24 and are entered every hour, and during peculiar states of the atmosphere every five, ten, or fifteen minutes, they afford a statement of facts from which instruction may be drawn. I have found the wires to mark with an almost unerring accuracy the approach of rain or snow, by *equilibriation*. I have recorded during the last 18 months, 54 earthquakes—a gale of wind on the ocean between lat. 34 and 49, every day, from the 6th to the 30th of September; lightning storms on 22 out of 31 days in August, and 12 out of 13 of the first days in September—an earthquake of great severity in Tuscany in Europe, and simultaneously volcanic eruption and lightning tempest in the Red Sea in Asia, 2500 miles distant, and these convulsions, which have been numerous in the extreme, have been accurately indicated by my observations made simultaneously and published the same week, and more frequently the same day in which they were made in a public newspaper, affording the means of comparison with the subsequent accounts from great distances abroad, when they arrive, and giving thus a satisfactory testimony that a convulsion however distant affects both the earth and the atmosphere to a greater extent than has heretofore been supposed. An earthquake at the Island of Antigua, lat. 18 N. long. 64 W, at 36 min. before 1 P. M. May 12. The Scientific American of May 22, contains my observations of May 12 to 18, both days inclusive, in which I record an *equilibrium* on the 14th, the day succeeding the convulsion. A lightning storm was experienced at Charleston, S. C. the 12th and 13th May, and rain fell on a very wide surface during both days. Thus the accuracy of the wires are again confirmed.

Yours Respectfully, E. MERIAM.

Banks.

There are fine applications for Bank charters pending before the General Assembly of Connecticut—from Winsted, Canaan, Derby, Deep River, and Westport.

© 1847 SCIENTIFIC AMERICIAN, INC

NEW INVENTIONS.

Great Improvement in Journals for Steam Engines.

Mr. G. L. Smith a young and excellent engineer of Hudson, has made an improvement in the form of a new kind of Journal, whereby a great amount of friction is saved and breakage prevented. It is well known that in parallel motion the joints are driven alternately at angles in opposite directions, and to prevent distortion, breaking and jerking the joints connecting the crank with the connecting-rod and the rod with the walking-beam, are fitted in sockets with great accuracy, to accommodate the rod to the turn of the centre. However carefully machinery is fitted up, especially in steamboats, from the sinking of beams and the general racking of timbers, it is well known that the journals are apt to get out of line and for this reason they are not *keyed* up so tight as they might be, to prevent breakage when there is a strain upon either side of the shaft. This is the reason why there is so much jerking and shaking in some of our steamboats. But for all this there is a great deal of breakage in steamboats from the causes we have mentioned, the journals often get out of the plane line all of one-sixteenth and sometimes one-eighth of an inch, a circumstance which must strain many parts of the whole engine. To prevent this Mr. Smith has invented a beautiful journal which like the ball of the human eye—that finest constructed of all organs—sits in a cup and by its accommodation to the *rod* and *beam*, keeps the journals continually in a perfect line.—This improvement ought to be applied to every new steamboat.

New Stamping Machine.

Mr. Carpmael has exhibited before the Royal Society of London, a novel machine for shaping metal by pressure, which to all appearance will soon revolutionize the whole trade of tinsmithing. Mr. Carpmael's method for ornamental work is to fix the object in a lathe and press its surface with a blunt tool.—Before the Society he explained how, by the means of a divided mandril, undercut forms could be obtained. He then pointed out that this burnishing to form could be alternated with *casting*; and that the flange was rendered unnecessary in the casting process—the metal being driven through a conical mould,—much on the principle on which pipes, &c., are drawn; the difference being that in the process which Mr. C. was describing, the object was forced through the gradually contracting aperture by the blow of a heavy weight falling on its lower surface. The effect of these combined operations was not only to produce ornamental articles, but also others of utility, and at a low price. Of the latter, he presented an example in a tea-pot, made of tinned iron-plate, by the joint process of *casting and burnishing to form*. This article, which he affirmed to be of the best fabric, is sold, wholesale, for 1s. 8d. Mr. C. also exhibited the machines by which tin is shaped into boxes and bottles for holding colors, perfumes, &c., by squeezing a small ingot of this ductile metal by a powerful pressure.

Metallic Hub, Spoke and Rim.

A Mr. Holmes of Moscow, N. Y., has at length perfected a metallic hub, spoke and rim, carriage or wagon wheel, by bracing the spokes in two rows on the hub, which is in two parts, a cylinder, in which the spoke is screwed or rivited and the axle sheeted. The spoke is also rivited or screwed into the rim.

Valuable Invention.

An improvement has been made in the steam engine valve, by Messrs. Wood & Lewis of Brooklyn. L I., by which from 20 to 30 per cent in fuel is saved. The improvement has been tested in this city by the proprietors of the Sun, in their press room, and they have found it a decided economist.

Improvement in Wooden Screws.

Messrs. R. Bliss & Co., manufacturers of Hand and Bench Screws, Pawtucket, R. I., have made some great improvements in the manufacture of wooden screws. The improvements consist in the cutting of the screws in a peculiar manner by machinery, whereby double the amount of screws can be made than by any other machine, and not only are the products multiplied, but in the saving of tools the economy is of no small account. A patent for these improvements will soon be secured.

New Boot Crimping Machine.

Mr. John E. Tucker, of Boston, has invented a machine for crimping boots, which appears to be quite a novel feature in the boot-making art. It can be made so as to be driven by steam.

Another Smoke Consumer..

A patent has been taken out by Messrs. W. G. and W. Taylor London to be applied to all furnaces constructed in the ordinary manner with open ash-pits, for affecting a more perfect combustion of the inflamable gases and unconsumed carbon. It consists, first, in the application of an exhausting and blowing apparatus; and secondly in a peculiar dsitribution or arrangement of the smoke flues, so as to be adapted to the operations of such apparatus. A fan, or blower, is applied to the flue just before the entrance to the chimney, to arrest the smoke and unconsumed gasses, and force them through a flue, leading therefrom, and opening on, to the dead plate at or near the front of the fire bars. By this means the whole is passed over the incandescent fuel where it is consumed instead of passing up the chimney unconsumed.

Mud Machine.

This is a machine used in England for clearing a channel which leads into the river Humber. It is made in the following manner:—The frame is of timbers 6 inches by 4; 12 feet long, 9 wide and 6 deep. This frame is covered with planking 2 inches thick, and through the middle of it a culvert is formed with planks 2 feet 6 inches in width, with a small lifting door at the end. Connected with the bottom and projecting in front are two long beams called feelers, which keep the machine in its course; at the bottom in front are frames of wood shod with rough iron like the teeth of a saw, and these, are connected with racks which can be raised by a lever. At each side of the machine there is a wing which is made to fit the slope of the banks to dress the mud from the sides and to keep up the water behind the machine At high tide the machine is moored in the middle of the channel, the wings are extended and kept so by ropes, and when the tide is at half ebb the plugs are taken out and the water rises about two feet in the machine which causes it to sink the plugs are then replaced, and thus it remains till full ebb, when the iron shod frames are let down in front and the tide forces the whole machine gently down the stream, scraping with it all the mud down to the river, where it is emptied and floated back with the return tide, the distance of about three miles being performed in 2 hours.

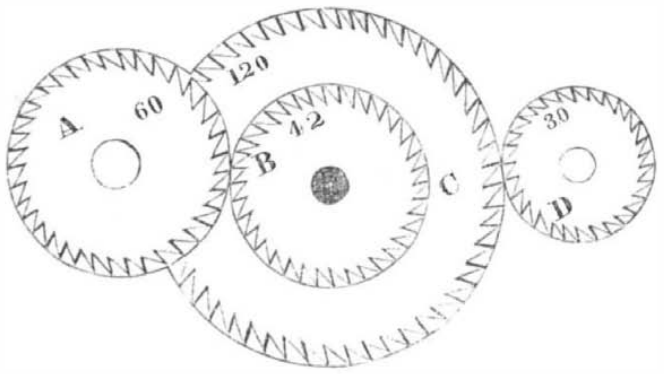
Towing Vessels.

An old sailor has sent a communication to the St. Catherine's Journal, describing a plan by which vessels may be towed out of the harbour when a head wind is not too fresh. It is simply to make two large umbrellas of about 16 feet spread, with canvass and iron rods. Being carried out, one of them may be let down into the water open, and by a rope attached to the handle the vessel may be warped out, scarce stirring the canvass. The other to be carried further ahead, to be used while the boat is towing the first yet farther, by a line fastened to the upper end—the two being used alternately. He had seen ships towed three miles the hour by this conveyance.

Oil of Stones.

Under this title we find in a recent Paris journal an account of a singular substance manufactured in France, of peculiar properties It was discovered several years since, and an interesting paper upon it was read before the Institute. Since then its manufacture, far from being abandoned, as many supposed, has been silently undergoing improvements and recently a company has been formed for its manufacture. It is now termed mineral oil. By means of new and very ingenious instruments and machinery, they obtain an oil as transparent as the purest water. This remarkable liquid is said to have this great advantage not staining by contact, and of giving an admirable light by the fixedness and clearness of the flame. The company possesses in Autunnois inexhaustible beds of the mineral from which this oil is extracted, as well as several other productions, as paraffine mineral tar, a new kind of manure invaluable for exhausted land, and many others. However much we may be surprised, adds the journal from which we derive this information, at seeing a vile and despised rock yielding a variety of precious matters, there is no room for us to doubt the fact. It only proves that the science of chemistry is in its infancy, and that no one can assign any limits to its progress When the first attempts were made to burn bituminous coal, who then would have believed in such results as gas-light, its application to the generation of steam, or the bright future in reserve for so humble a mineral? and yet are not the mines of Auzim more valuable to their proprietors than the silver mines of both the Indies?

SCREW CUTTING MACHINE.



The screw and its thousand uses are familiar to every one, but comparatiyely few of those persons even, whose business it is to make them, have a complete knowledge of the screw engine. The accompanying diagram will serve to render clear, what we have to say upon the subject. Let A B C D, represent a train of geers arranged in the usual manner for screw cutting, each geer being susceptible of use in either of the four positions. The geer A, in the present arrangement, being fixed to the arbour of the machine, designated the arbour or driving geer. The stud geers B and C are coupled together by a pin, and revolve upon the stud. These geers communicate motion from the arbour A, (and give the right direction,) to the screw geer D. It will be seen that one of the stud geers might be dispensed with, as far as the direction of the screw is concerned. But upon further reflection it will be seen that by having two, we are enabled to make more changes and thereby cut a greater variety of threads with the same number of geers. The geer C, is fixed to the screw which moves the slide rest or toolstock. The screw to be cut being fixed to, and revolving with the arbour A, it is evident that its number must be determined by the number of revolutions A makes while D is moving the tool stock one inch, screws being numbered by the number of turns they make to an inch. Now suppose that the screw D is No. 10 and we wish to arrange the geering so as to cut a screw No. 10. To do this we have only to combine the geering so as to give A and D a like number of revolutions, or if we wish to cut a No. 8 screw, we must give the arbour 8, while the screw is making 10 revolutions &c., and to calculate what No. we can cut with any combination, we multiply the number of teeth in the screw geer by the number of screw, and divide the product by the number of teeth in the inside stud geer and multiply the quotient by the number of teeth in the outside stud geer and divide the product by the number of teeth in the arbour geer, and the last quotient gives the number of the screw cut,—thus: multiply 30 by 10 and 42 and divide by 120 and 60 and 1 3-4 No. screw, is the answer.

We have received the above from Mr. F G. Woodward, Worcester, Mass., and will publish the table of 24 combinations in our next number.

Preserving Life in case of Shipwreck.

The following method of life preservation in cases of shipwreck has been suggested by a gentleman in London and recommended to the Royal Navy:—

"The plan I propose is, to place the means of safety in the crew itself, when the vessel is stranded, by allowing every ship to be supplied with the following apparatus, of very trifling cost. Let a ribbed ball of (white painted) canvass, about sixteen inches in diameter, filled with cork, be suspended to the stern: a reeled line is to be attached to the same, which line must be made to float, by a few balls of cork rove on the same; and in the time of need this ball is to be thrown overboard. As the wrecked vessel is generally cast on the lee shore, it must be expected that will reach the land, driven by the same wind; and by this will be effected the desideratum of getting a rope ashore from the vessel. Although the foregoing plan is for immediate application, I would preserve the present means afforded, and would rather increase the same than diminish it. I beg to say that I have taken the opinion of the best seamen, who all approve of the plan"

Paper Glass.

Prof. Schœnbein of Basle, who invented the gun cotton, has lately, to a certain point, discovered Malleable Glass! He renders paper paste (paper mache) transparent by causing it to undergo a certain metamorphosis which he calls *Catalytic*, for want of an intelligible term. He makes of this new paper panes of glass, vases, bottles, etc., perfectly impermeable to water—and which may be dropped on the ground without breaking—and are perfectly transparent. He also renders paper impermeable, and perfectly suitable for bank notes.

Cement for Floors.

The following receipt is from Col. Totten of the U. S. Engineer Department.

The mortar is to be made of one part of sand in rather stiff paste. Then one part mortar, thoroughly mixed, is to be used with two and a half parts broken stone or bricks, the largest pieces not exceeding four ounces in weight, or of gravel of similar size, or of either or all these mixed together. These coarse materials must be free from sand or dirt. The concrete thus made, must be put down in a layer of not more than six inches, which will be about the proper thichness for the floor; rammed very hard, and until the coarse particles are driven out of sight, care being taken to bring the top of the mass into the true place of the floor by the first process; no subsequent addition of plaster being admissable. By the help of a straight edge drawn over guide pieces, the top surface may be made smooth and even by the first operation.

The concrete should contain no more water than is necessary to give the requisite plasticity to the mass. The floor should be covered as soon as finished, with straw or hay, which should be kept wet for several days, the longer the better.

Rosin Paving.

A portion of one of the Streets in Fayetteville, N. C. is actually *paved with solid rosin*. A correspondent of the Boston Post says that he has rode a horse and driven a carriage over this novel pavement several times, and a capital road it makes. It has a beautiful clear look, presenting a smooth, hard surface, and *it never rots*. The manufacturer means to cast it into blocks of the right shape and size for constructing aqueducts, water-courses, and sewers.

© 1847 SCIENTIFIC AMERICIAN, INC

NEW YORK, JUNE 19, 1847.

The Age of Iron and Steam.

The pyramids of Egypt look down in grim and solemn grandeur upon the architectural piles of the present age and seem to laugh at every effort to rival them, either in gloomy grandeur or enduring simplicity. It is indeed true, that the highest trophy of modern architectural genius will have mouldered in the dust, when in proud dignity the pyramids will still rear their lofty heads mocking the burning winds and the drifting sands of the arid desert. But if we rival not the *ancient* age in solemn monuments and enduring piles, we surpass the wildest visions of the author of Amadis in the creation of a wizard power that levels the billows of ocean to the wheel of the steamboat, as the roller smooths the arena to the hoofs of the courser. This mighty creative power is the Steam Engine. By coal, iron and water the majestic ship marches triumphantly over the mountain wave and carries afar to distant lands in comfort and safety the spirit of the New World's freedom—the light of its practical science—the trophies of its genius—the tokens of its power, and the fruits of its industry. Oceans no more divide separate continents by the dangers of navigation, and the desert separates nations no more by its burning breath. Continents are linked together by the iron shaft of the engine and the desert is passed in safety on the lightning wing of the locomotive

Who is he that can gaze upon the stately steamer as she moves from the wharf as by magic bearing a thousand human beings on her spacious decks, and not feel that the present age with its wonderful inventions, proclaims more triumphantly the divinity of our descent than all the splendid fabrics or enduring monuments of the past? When we find ourselves transported a hundred miles in a few hours without an impulse of our own, and with all the comfort and ease of being seated in a parlor, if we reflect at all, we cannot but be impressed with a feeling of awe in respect to the wondrous power which can produce such results—a power delegated to man by his great Creator whereby the winds and waves are at his bidding.

Wonders cease to be wonders, when they become common occurrences, but they are no less wonderful for all that. The Steamboat and the Locomotive are now to us no objects of astonishment, but take the chamois hunter from his snowy cliffs and put him on board a steamboat, and let the huge engine be immediately set in motion, and what, might we not imagine would be his feelings? Him who had a hundred times beheld unmoved the avalanche thundering from crag to crag, would tremble we believe, with fear to see himself borne away out on the waters by a cause of which he could form no conception, and of which all he could tell, was only the huge walking-beam leaping irresistibly up and down. And if he asked what was the power and what the cause which produced such wonderful results and was to be shewn a piece of coal, a piece of iron and a cup of water, and be told that out of these three substances the genius of man had created this power, he would not believe the story, but laugh as incredulously as Saladin did, when told by Sir Kenneth that his brave steed had carried him in safety as upon dry ground, over the lakes and rivers of his northern clime. Such are some of the wonders of the present age, produced as it were by small things. Water can be expanded by the combustion of coal to four hundred times its bulk and a great deal more in proportion to the strength of materials into which it is confined. This expansive quality of water applied to lifting up and down in an iron jacket a certain weight, is, with all the appendages of supplying and exhausting, the Steam Engine. This simple, but great machine, has revolutionised the age, and has done more to exalt humanity and benefit the human race, than all the victories of Cæsar or the triumphs of Napoleon. We wish to hold up the true benefactors of the human race and to let the world know, that although the names of Fulton and Watt are but scarcely mentioned in history, they are not to be forgotten while the monuments of their genius, far transcending that of earth's mightiest heroes, are to be seen careering along the railroad or sweeping over the wave.

There are some points of difference in regard to the application of our engines in steamboats from those of the British. The engines of the Washington have all of 2½ feet more stroke than those of the Boston and Liverpool line, and we wish to call attention to the observance of the workings of the two methods in ocean navigation. We have scarce a doubt of the superiority of the American system, but it is by experience only that we can arrive at correct conclusions.

Grand Demonstration of the Mechanics at the Tabernacle.

An Order of Mechanics, called the Mechanics Mutual Protection had been for some days sitting in Convention in this city, and on Thursday evening, the 10th inst., they assembled at Convention Hall, Wooster street, and marched in procession, accompanied by the New York Brass Band, to the Tabernacle, where an Address was delivered by Justus G. Gillespie, of Troy, who is named Grand Protector, and an Oration by Robert Macfarlane, Past Grand Secretary. The address pointed out in strong language, the many great follies of the age—follies into which the working classes were too apt to be led and which ended in ruin to themselves. The oration was an exposition of the principles and objects of the Order, and it gave us pleasure to hear and to know that, very different from what might be supposed from the name, their objects are to bring together into associations old and young mechanics, employers and employed, and to cultivate a good feeling among them and also encourage a pursuit of knowledge, to get libraries and lectures established and to get the mechanics themselves to lecture and bring out their practical knowledge by correct arrangement. It is no combination of workmen against employers—as the majority of the delegates from the western part of the State were men engaged in business for themselves. They assist each other to get work, and in cases of sickness there is a fund for the benefit of the sufferers. There are seven associations in New York City and the manner in which the Demonstration was arranged did great credit to them. The delegates to the Convention and the members in the city looked remarkably respectable and neat. There was no great ostentation, but a sober, decent and manly appearance characterized the whole body of the Association, and the speakers had the pleasure of addressing as respectable and large an audience as ever graced the far famed Tabernacle of New York city.

We look with pleasure upon every association which tends to elevate men by a pursuit of moral and intellectual knowledge—by the cultivation of a friendly feeling among mankind generally, and we believe that no class of men have more need to cultivate this feeling than the mechanics.

"Empire House," Syracuse.

The above house, kept by Joel Cody, Esq, probably surpasses every other public house in point of elegance, neatness and comfort in the State A friend who is travelling through the Western States informs us that he not only thinks it the best and most orderly public house he ever stopped at, but adds, it is the general acclamation of all travellers that have once been there that it is *the* Excelsior hotel of the State. It has been newly furnished in superb style, and is situated in the most accessible and pleasant part of the city. From its Observatory can be seen seven villages, the Onondaga lake, and the immense Salt Fields and Works. All persons travelling West would do well to call on the worthy proprietor of the above establishment and test for themselves the truth of our assertions.

Florida Turpentine.

The Jacksonville (Fa.) News, records the arrival there of 70 barrrels of Turpentine, the first which has been collected since Florida has belonged to the United States.

Motion, Resistance, and Effect on Machinery.

There are many modifications of machines, and various applications, yet there are but three objects to which their utility tend. The first is, giving the moving force to the easiest direction, and causing its action to be directly applied to the body to be acted upon. These are not often united, especially the latter. The second is accommodating the velocity of the work to be performed, to the velocity with which a natural power can act. The third and most essential, is the regulation of the moving power, so as to produce effects which otherwise could not possibly be done. Such as lifting 200 lbs. by hand and 1000 lbs. by a block and tackle.

There are three motions in machines, viz. accelerated, uniform, and alternate. The first takes place when the moving power is just applied, the second after the machine has been some time in motion, and the third is like the striking of the clock by every 360 strokes of the pendulum, or the three might be justly summed up *accelerated* and *retarded* motions.

The grand object in all cases is to procure a uniform motion because it produces the greatest effect. All irregularities indicate some point resisting the motion and to overcome such, a part of the propelling power is wasted. If a machine moves with a too rapid motion, it is certain, that the power is greater than what balances the resistance, therefore an effect is lost, because the whole resistance is not applied. In both cases, the machine has not the effect which it would have if moving uniformly.

When irregularity of motion takes place, particularly in a large heavy machine, it suffers a continual straining, which will soon destroy it. It is therefore of the utmost importance to remove every cause of irregularity. There are many fundamental rules for calculating the minimum and maximum effects of motion, but without any elaborate calculation, we present the following simple effects of one horse power in the different applications referred to in the preceding observations,

One horse power, at a maximum can lift by a pump 250 hhds. of water 10 feet high in one hour. One horse power, at a medium, is calculated to drive 100 spindles with preparation of cotton yarn twist, and 500 spindles with preparation of mule yarn, No. 36. All intermediate numbers in proportion above or below, excepting a very slight gain as the number rise. One horse power is calculated to drive 12 power looms.

The Oregon Railroad.

We conclude in this number of our paper, an interesting report of the address of Mr. Whitney, on the subject of that herculean project, the Railroad to Oregon, of which he is the projector. The vast results to flow from the progress and completion of the work he estimates to be the opening to settlement and cultivation a wilderness more than 2500 miles in extent, giving it free intercourse and rapid communication with all the world, and so extending agricultural production as to afford exchanges to sustain all other branches of industry; while it would not only give the means but force the completion of the New York and Erie, the Pennsylvania, the Baltimore and Ohio, the Richmond and Ohio, and the Charleston railroads to Ohio, where they would all join in one and run on to join the Oregon road where it would cross the Mississippi, and the grand centre be near the Missouri, requiring but 2½ days to any city on the Atlantic, 2½ days to the Pacific, and 25 days to any part of the globe, carrying with it too from ocean to ocean a belt of busy, thriving population 3400 miles in extent Add but to this the extension of the Magnetic Telegraph along the line, and the mind almost staggers at the contemplation of a result so full of hope for the future.

Mahogany Ships.

The English shipbuilders are beginning to use mahogany instead of East India teak. The present low price of the former is caused by the extensive use of other woods, as black walnut, oak. &c., in the manufacture of cabinet ware.

Phenomena of light.

Light holds a most intimate connection with all the other sciences both in its constitution and operations, and must ultimately attain a most important rank among the sciences and repay back to them what it has received from them. Many of the phenomena of light are only to be explained by reference to the hydro-dynamic principles. The relation of the laws of light, acoustics and music are most astonishing in their resemblance. The phenomena called polarised light presents philosophers with the most delicate instruments for ascertaining the constitution of bodies. It is an optical law that all transparent bodies become colored when they are formed into plates attenuated beyond certain limits, and moreover, that the particular colors, which under these circumstances they show, are dependant upon the degree of attenuation. It was thus that Newton determined that the thickness of the thinnest part of a soap bubble when colors are first visible is no more than 1–25,000 of an inch, and that before it bursts it attenuates to 1–4,000,000 of an inch; and by the same means that we know that the transparent wings of some insects are not more than 1–100,000 of an inch in thickness.

Progress of Speed.

When the old steamboat "Chancellor Livingston," made her trip to Albany in twenty eight hours, all the people were in ecstacies at the remarkable short passage. But when the old "North America" steamed it through in twelve hours, why the whole population from New York to Albany were perfectly thunderstruck. When locomotives first got into active operation the whole of America was up in transports of astonishment, and deemed it perfection in swiftness of travelling. But again, comes the Telegraph, and turns these notions all over—time itself is distanced in the race. There is speaking by Telegraph, writing by Telegraph, and we shall soon have *printing* by the Telegraph—nothing will be able to go ahead of it then.

New Discovery of Lead.

In digging a well at Sun Prairie about fourteen miles north east from Madison, W. T. small quantities of lead ore have been found in blue limestone rock, about thirty feet below the surface. This rock underlies the magnesian or proper lead rock, so that it is not probable the deposit is sufficiently extensive to be valuable. Geological investigations seem to render it quite certain that the true lead-bearing rock may at some period have extended as far north as the Wisconsin river, but that it has been worn away by the diluvial currents. Its numerous fissures are what make it lead-bearing, as the mineral came up through several varieties of rock, including the blue limestone, before it reached its present position.

New Speculation.

Mehemet Ali has found a new source of revenue, in the *fine linen* in which the immense deposits of *mummies* are wrapped, by applying it to the manufacture of paper. Calculations, founded upon *mummy statistics*, make the linen swathings of the ancient Egyptians worth $21,000,006. This is better than stealing pennies from the eyes of dead men.

To New Subscribers.

Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

THE
SCIENTIFIC AMERICAN.

Persons wishing to subscribe for this paper, have only to enclose the amount in a letter directed (post paid) to

MUNN & COMPANY,

Publishers of the Scientific American, New York City

TERMS.—$2 a year; ONE DOLLAR IN ADVANCE—the remainder in 6 months.

Postmasters are respectfully requested to receive subscriptions for this Paper, to whom a discount of 25 per cent will be allowed.

Any person sending us 4 subscribers for 6 months, shall receive a copy of the paper for the same length of time.

© 1847 SCIENTIFIC AMERICIAN, INC

Formation of Rocks.

(*Concluded from No.* 38.)

Sir James proceeded a step farther in his imitation of the processes employed by nature. Sandstones are often more or less tinged or streaked with colors, and the coloring matter is generally metallic. A little oxide of iron (in powder) was therefore mixed with the salt, and this being put into a crucible with quartzose sand, it was found that the fumes of the salt bore up the metallic oxide along with them and the cake of sandstone produced was curiously stained with iron."

Basalt had been the subject of similar experiment so early as 1804. The general character of this rock is well known. It is one of those of igneous or volcanic origin—is generally of a blackish color, and always of a very hard consistence, being composed mainly of two ingredients, felspar and augite, with titaniferous iron, and, finally, it is often of a columnar structure—that is, disposed in masses as of pillars closely joined together. The island of Staffa, one of the Hebrides, is a mass of rock, a mile and a half in circumforance, consisting of three beds more or less horizontal, of which the central is a range of nearly upright columns of basalt, in which several caves have been formed by the action of the waves. Another notable specimen of the basaltic formation is presented in the Giant's Causeway, on the northern coast of Ireland — "This," to quote the description of a philosophical traveller, "is a sort of promontory or jettee, which slopes very gradually down to the sea, and terminates in a point, against which the waves dash with great violence.—This jettee forms the left point of a semi-circular bay, surrounded on all sides by a steep and lofty coast, which displays, in all its extent the finest specimens of basaltic phenomena—nothing is to be seen, on either hand, but groups of columns in an upright position. The Giant's Causeway, properly so called, is itself one of these groups, but so much lower than the rest, that the tops of the pillars are seen naked a little way above the level of the sea. The uniform appearance of the upper end of these innumerable columns makes it seem at a little distance like a pavement of polygonal (many-cornered) stones. Upon a nearer approach, they are found not to be altogether on the same level; and in walking along the causeway, one is obliged to step continually up and down, as if on the steps of a stair. All the pillars are nearly in perfect contact with each other, without the interposition of any other substance. There is no great variety in their sizes; the common diameter is from 12 to 15 inches. The number of their angles is not uniform; there are some with eight, and some with four; but the most common form is hexagonal (six-cornered") The description is completed by the statement, that the columns are divided into blocks, or prisms, like the pillars composed of a succession of stones in ordinary masonry; but in this case each block has an angular projection at the top, fitting into a corresponding hollow in the stone next above—these projections and hollows generally occupying the whole joining surfaces, except about an inch-breadth.

These objects are the wonders of their respective countries. The country people will not believe that they have not been the work of some superior class of mortals, so like are they to human handiwork. The poet speaks of the cave of Fingal in Staffa as a temple reared by nature, to shame the miniature works of pigmy men; and even the philosopher has surveyed them in despair of ever ascertaining the mode of their construction. Yet this secret of nature has yielded in the long run to the persevereing ingenuity of her children. About 1804, Mr. Gregory Watt fused seven hundred weight of an amorphous or unshaped basalt named Rowley Rag; the fire was maintained for six hours, and the mass was then suffered to cool very gradually, so that eight days elapsed before it was removed from the furnace.—The experimenter found in it *spheroids*, or flattish globular masses, in some cases extending to a diameter of two inches. *When two of these came in contact, they did not melt into each other; they kept distinct, but pressed against each other, and formed plane sides*, just as soap bubbles may be observed to do when they press together. When several spheroids met, they formed prisms, or acquired plane sides all around. Where the centres of a great number of these spheroids were at equal distances from each other, it was calculated by Mr. Watt, that, in spreading out and meeting each other, *they must necessarily form six-sided figures.* Where the centres were at unequal distances, it was not less clear that figures of other shapes must be formed.—Mr. Watt further supposed that, if these spheroids were resisted below, but not above, they would extend upwards, till they met some counteracting cause, and thus form columns.—The divisions or jointings of some basaltic columns is here a difficulty; but Mr. Watt endeavored to get over it, by pointing to a series of concentric fractures in the interior of his spheroids, he supposed that the division into blocks might be owing to the same law of crystallization which produced that appearance. Thus what was once thought one of the most mysterious of all natures' operations was so far mimicked in a chemist's work-shop, as to lead to a nearly certain knowledge of how the operation took place in natures' own greater laboratory. Staffa, the Giant's Causeway, and other well-known basalts, must have been once fused masses, which assumed their columnar structure as a simple consequence of the manner in which they were cooled.

More recently, crystals like those found in rocks have been formed by Becquerell and Mitcherlich foreign mineralogists, by means of electricity acting upon a solution containing the ingredients; and Mr. Crosse of Somersetshire has, by means of the same power, acting with small force, but during a considerable space of time, exactly stimulated a process going on in the Quantock Hills, where water percolating through limestone forms calcareous spar. The latter gentleman has also made crystals of silver, chalcedony, and quartz, out of various solutions.

Experiments like these are chiefly of value for the illustration they give to a very interesting and instructive truth which lies at the bottom of all philosophy, namely, the invariableness of the laws of nature, whether they act upon a large or small scale. A sheet of rock, extending perhaps underneath some large district of country, and a quantity only sufficient to fill the breech of a gun barrel, take their form and character under precisely identical circumstances. A few hundred weights of basalt exemplifies in a common furnace those mighty workings which, countless ages ago, produced a Staffa and a Giants' Causeway. So also did the falling of an apple in a Lincolnshire garden suggest to the pregnant mind of Newton the secret of planetary movements. Nature has no daintiness; she forms a globe fit to sustain millions after millions of breathing beings, and spherifies the dew-drop which only reflects a miniature of the hawthorn blossom with the same silence and serenity. The interference of man's busy mind to direct her movements offends her not, and she makes no distinction of persons. She is as ready to obey the call of the simplest child as to act on her own majestic will. She will act in the laboratory of the nameless mechanic, as well as in the bosoms of her own magnificent oceans

Subterranean Rivers.

According to Dr. Kircher, the river Volga poured such a quantity of water into the Caspian Sea in the course of one year, that was there not some invisible outlet, it would be sufficient to cover the whole of the earth. According to his account this outlet was in a vast cavern passing under Mount Caucausus into the Euxine Sea, by which the waters of one sea disburdened and discharged themselves into others, and the whole kingdoms of Georgia and Mingrelia, under which they ran, were a bridge to these subterranean waters. The same was said of the Persian Bay which is said to be the reservoir of the Caspian Sea. It has also been alleged that there was also a subterranean communication between the Red Sea and the Mediterranean. The Niger and the Nile are supposed to run under the mountains of Nubia. A subterranean river wends its obscure race through darksome dens and rocky cliffs in the Great Schoharie Cave, and afar in the caves of the Cumberland mountains streamlets roar and rush on continually. Above us and below us, the heavens and the earth are full of wonders.

The Oregon Rail Road.

(*Concluded from No.* 38.)

The necessity for this road must be manifest to all, as the only means by which almost all the vast country through which it would pass can ever be settled, or made of use to mankind; and as the only means of connexion and intercourse with Oregon. A well grounded apprehension seeming to exist, that unless some means like the one proposed of rapid communication with that region, be devised and completed, that country, soon to become a state of vast proportions and of immense political importance, by reason of its position, its own wants, unattended to by this government, will be compelled to establish a separate government—a separate nation—with its cities, ports, and harbors, inviting all the nations of the earth to a free trade with them. From their position they will control and monopolize the valuable fisheries of the pacific, control the coast trade of Mexico, South America, and the Sandwich Islands, and other islands of the Pacific, of Japan, of China, and of India, and become our most dangerous rival in the commerce of the world.

It has been suggested that such a work cannot be bu lt and carried on through a wilderness. I answer. If it was not a wilderness I could not have the only means, the lands, for such a work, and I propose to make the work itself change the wilderness, the waste, to cities, towns, villages, and richly cultivated fields. It is also objected, that our country is not old enough and without population to embark in an enterprise so vast. I answer. We have already about 8,000 miles of railroad in operation at a cost or outlay of about $160,000,000; that our population is at this time 21,000,000, will double in twenty-two years, and if we have been able up to this time with our small population and smaller means to complete the 8,000 miles, by the double of our population and consequent double of means, we shall be as able to double the miles of railroad; and the comparison is greatly in favor of the future, because many of our present railroads are exclusively means of travel, and have not developed sources of production and wealth. Our increase of population in twenty-two years would give for this road and the Pacific 11,000,000, and leave ten million for the old States.

But let us see what we want for this road. I make my calculations and predicate the whole upon the sale and settlement of the 800 miles of the first part; therefore this 800 miles by 60 miles wide, would give 30,720,000 acres.—Now allow 160 acres for each family of 5 persons, and it would require 192,000 families, together 960,000 souls. It will require for the commencement five years to complete this 800 miles, (and 15 years the entire) and to sell and settle the 800 miles in 5 years would require per annum 38,400 families, 192,000 souls; but as it is not necessary to sell and settle more than one half while the entire 800 miles is being built, 19,200 families, or 96,000 souls per annum is all that would be wanted, which is less than one-seventh of our now yearly increase of population; and only about half of what we may expect the yearly emigration from Europe during that period.

It has been my endeavor to show that this road can be built upon the plan I have proposed, and that the means which I have asked for will be made ample only by the road, and I hope I have not failed to do so. But there are other views to satisfy—there are those, who (perhaps without examination) think or fear, too much may be gained to those who may be interested with me in the work—that it may create much individual power, accumulate lands in individual hands, &c., &c. In answer I say the land is now worth little or nothing; if of any value hereafter, that value would be derived from the road alone, and those who buy the land on its borders would receive all the benefits; that the lands must be sold and settled, or the road cannot be built, and as the government have 1,000,000,000 millions of acres, there could be no monopoly in sale; if the price demanded too high the lands would not sell and the road not built; that lands cannot accumulate because the act will provide and fix the time of sale at public auction, and in lots of 40 to 160 acres. * * I have not undertaken this work with the expectation of benefit to myself; it will probably (if I succeed) require all my life, and were I to gain millions it could do me no good. I have undertaken it for the good of my country first, and after that all mankind, and think if I should live to see its accomplishment, I shall not be disappointed in its results; that it can be completed with the means proposed I am full well persuaded.

Providence, Rhode Island.

This city, within a few years, has set about with vigor developing its resources. Capital is seeking and finding new and productive means of investment, and all the channels of mechanical industry are flowing to good account. The water power in the country around being about all taken, and as steam comes afterwards to be generally used as a motive agent, the city with its manifold means of communication, will be most advantageous for the location of manufacturing establishments. By present indications, it is plain that it must at no distant day, with continued prosperity, become the seat of a very large business. It is the centre of an extensive manufacturing district, the capital for the support of which it mostly supplies. The Iron business, in particular, in its various branches, has within a few years become an important department of enterprise. The Railing Mill is supplying orders for railroad and other kinds of iron, while great quantities of wire, screws, butts, edge-tools and other kinds of goods are turned out by various establishments Many new buildings are going up this season—some of them quite large and handsome. A new kind of granite has lately been introduced, brought from Westerly, a town on the South Western sea-board of the State, a convenient place for shipping, and where it is said extensive ledges of it, easily quarried, are found, Some specimens have been used in the substructures of some houses now building. When finely chisseled it has almost the smoothness and whiteness of marble.

Death by Sorrow.

Charles Thornton Cunningham. Governor of the Island of St. Christopher's, had just arrived from his country seat at Basselturn, the seat of government in good health and spirits; after having transacted some business he went to the mail office and got a box containing a picture of a beloved sister recently deceased in England. He had stated to more than one person that his earnest desire to possess the picture was not unmixed with fear as to the effect the sight of it might produce upon him. So strongly had this apprehension fastened itself upon his mind, that on the arrival of the box at the Government House he sent a servent in quest of a friend who might be with him when the box was opened. Having failed in finding him, he proceeded to open the box. His butler who was present reports that he lookod at the countenance earnestly, turned pale, whispered a few words to himself, walked hastily up to his room, and was heard to fall immediately upon entering it. His servants followed instantly, and on entering fonnd him stretched upon the floor—a corpse!

Depend on Yourself.

Most young men consider it a great misfortune to be born poor, or not to have capital enough to establish themselves at their outset in life in a good business. This is a mistaken notion. So far from poverty being a misfortune to them, if we may judge from what we every day behold, it is really a blessing; the chance is more than ten to one against him who starts with plenty of money. Let any one look back twenty years and see who began business at that time with abundant means, and trace them to the present day; how many have become poor, lost their places in society, and are passed by their boon companions with a look which plainly says, I know you not.

Turning the Penny.

An instance of the freight mania, at Buffalo, has been related to us. A poor man on the Ohio canal, bought a scow for $550; and freighted it with flour to Cleveland, his profits *paying for the scow.* He then hired it towed to Buffalo, and in a few hours sold the old scow for $1100! So much for twenty days work, and a little enterprise.

© 1847 SCIENTIFIC AMERICIAN, INC

TO CORRESPONDENTS.

"J. L. of Penn."—Coal tar cannot be used for a paint any more than wood tar. It is a good preservative of wood exposed to the atmosphere or water. It cannot be mixed with other colors profitably in any manner.

"M. R. of N. Y."—The measurement of tonnage by the displacement of water, may be computed, we think, by multiplying the area of the beam, measured from the water strake down, by the length of the keel.

"S. A. H. and S. C. of N. Y."—We shall notice your improvement of the Electro Magnetic Battery more fully in our next.

"D. G. of Penn."—We are of the opinion that your improvement on the paddle wheel would not answer, at least for ocean navigation. The great difficulty presented to us, is the impossibility of uniting sufficient strength with its other good qualities to overcome the excessive strain and hardship to which some steamboats are subject. But if this can be done, you have arrived at a most important conclusion.

"G. T. of Michigan."—You had better write to Mr. Jackson, Iron manufacturer, at Westport, Mass. for information regarding the improvements in the blast furnace. We think that the waste heat might be profitably employed for the burning of marl. The flaxseed would be all the better to be roasted in a retort, in fact it should always be done so, altho' the seed can be, and has been, prepared by roasting in open pans, but there is always a waste in this way The horizontal paddle wheel has been tried and found to be defective, but we do not recollect of ever having heard of one constructed as you propose "to project and recede by an eccentric cam." We are, however, disposed to favor the present universal custom of the paddle—the power being so directly applied. Your harvesting machine is a grand conception and cannot fail to reward you yet, although you may not perfect it in some time It is just what is needed on the prairies. But if possible endeavor to obtain the vibratory motion by the horses drawing instead of pushing, as more power can be exerted in this manner.

"C. H. P. of Mass."—The strength of the glass keys can easily be tested—they will be easier broken than iron or ebony. They would assuredly be more beautiful than those in common use, but they would need to be drilled and fastened with silver wire, as no substance with which we are acquainted can cement glass in the same manner as wood is cemented. But you must experiment. Experiment is the soul of invention. Your idea is a capital one. Let us know again how you succeed. If successful, it is worthy of a patent. If you could by the blow pipe soften the black and white key glass (but it will be difficult to get pure black) you might cement them effectually.

"G. H. and H. P. of N. Y."—The experiment of five strings for a violin, instead of four, can be easily tried, and with the silver wires, but we question the propriety of doing so, as the violin already is a dwarf in stature but a giant in power. The master can roll the note of the clarion and the soft breathings of the harp on the four strings.

"J. B. F. of Penn."—We shall favor your request shortly.

"E. H. A. of Mass."—Your improvement of block paving appears to be feasable, but we believe that in a short time the iron T. would be seen standing above the surface of the wood. As far as experiment can be trusted—and experiment is the only test—block pavements have failed to realize the anticipation of many in this city and elsewhere.

"H. W. D. of New York."—We shall favor you with the description of a simple battery in a future number.

"W. B. S. of S. C."—Your machine will be noticed in due season and the information requested shall be obtained if possible.

"A. S. of Brooklyn,"—There is no instrument to measure what you require, bnt if you take the compasses and run two circles the one line just to meet the other, and divide the two circles into fourths of the whole; run a line up between where the two circles meet, to the point on a line with the outer lines of the circles, then from this central point extend the compasses until they just touch the point of the lines of a fourth of a circle and sweep round to the other point; then change the compasses and perform the same on the other side, and you have a true oval. Try it upon ruled paper, taking five lines for an experiment, letting the dividers rest on the centre line.

"A. S. of L."—We shall notice your stave dressing machine in our next number.

"J. H. of Mobile, Ala."—Your machine was forwarded last Friday, per brig Damascus.

Chapman's Drawing Book.

We have received the first number of a work by the above title, published by J. S Redfield, Clinton Hall, in this city, which merits the patronage of every school and parent in this country. This number contains all the primary information necessary for a learner in the art of drawing, and far excels any other work of the kind published in America. It contains easy lessons for the practice of new beginners, and beautifully illustrates the proper position for holding the pencil or implements to be used, with embellished objects for the practice of the learner as he advances in the art. It is published in numbers at 50 cents each, and will contain instructions from elementary rules in perspective, to the most difficult of oil and water paintings.

FIRST VOLUME.

We would inform those who have been disappointed in procuring the whole of the first volume of the Scientific American, that we have recently come into possession of a few complete sets of the last half, (i e. from Nos. 26 to 52 inclusive) which we will dispose of at the subscription price, viz. $1 per set.

ADVERTISEMENTS.

☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

Advertisements are inserted in this paper at the following rates :

One square, of eight lines one insertion,	$ 0 50
" " " " two do.,	75
" " " " three do.,	1 00
" " " " one month,	1 25
" " " " three do.,	3 75
" " " " six do.,	7 50
" " " " twelve do.,	15 00

TERMS:—CASH IN ADVANCE.

GENERAL AGENTS

FOR THE SCIENTIFIC AMERICAN.

New York City, -	Geo. Dexter.
" " -	Wm. Taylor & Co.
Boston, - - -	Messrs. Hotchkiss & Co.
Philadelphia, - - -	Stokes & Brother.
Boston, - - - -	Jordon & Wiley.

LOCAL AGENTS.

Albany, - - - -	Peter Cook.
Baltimore, Md., - - -	S. Sands.
Cabotville, Mass., -	E. F. Brown.
Concord, N. H. -	Rufus Merrell.
Hartford, Ct., - - -	E. H. Bowers.
Lynn, Mass, - -	J. E. F. Marsh.
Middletown, Ct., - -	Wm. Woodward.
Norwich, Ct., - - -	Safford & Parks.
New Haven, Ct., - -	E. Downes.
New Bedford, Mass., -	Robinson, Parsons & Co.
Newark, N. J., - -	J. L. Agens.
Newark, N. J - -	Robert Kashaw.
Providence, R. I., - -	H. & J. S. Rowe.
Rochester, N. Y. -	D. M. Dewey.
Springfield, Mass., - -	Wm. B. Brocket.
Salem, Mass., - - -	L. Chandler.
Saco, Me., - - - - -	Isaac Crooker.
Troy, N. Y., - - -	A. Smith.
Taunton, Mass., - -	W. P. Seaver.
Williamsburgh, - -	J. C. Gander.
Dover, N. H. - - - -	D. L. Norris.

CITY CARRIERS.

Clark Selleck, Squire Selleck.

Persons residing in the city or Brooklyn, can have the paper left at their residences regularly, by sending their address to the office, 128 Fulton st., 2d floor.

ASHE,

Sign, Banner and Ornamental PAINTER.

133 Fulton Street, opposite the Scientific j12 4t **American Office.**

NEW YORK PATENT AGENCY.

RUFUS PORTER continues to execute drawings and specifications of new inventions for the Patent Office, at lower prices than any other artist in this city, at his rooms No 40 in the Sun Buildings, No. 128 Fulton street. Models of machinery and Electro Magnetic apparatus, made at short notice. j19 3t

GENERAL PATENT AGENCY.

REMOVED.

THE SUBSCRIBER has removed his Patent Agency from 12 Platt to 189 Water street.

The object of this Agency is to enable Inventors to realize something for their inventions, either by the sale of Patent Goods or Patent Rights.

Charges moderate, and no charge will be made until the inventor realizes something from his invention.

Letters Patent will be secured upon moderate terms. Applications can be made to the undersigned, personally or by letter post paid.

m8 3m* SAMUEL C. HILLS, Patent Agent.

FASCINATION,

Or, the Philosophy of Charming.

Illustrating the Principles of Life, in connection with Spirit and Matter.

BY JOHN B. NEWMAN, M. D.

The above is the title of a work just published and for sale at this office. It is designed to to convey a knowledge of Animal and Human Magnetism, which should be examined and understood by all We cannot give a more correct idea of the work than by the following from the table of contents.

CONVERSATION I.

Charming.—Popular views on fascination ; influence of the imagination ; process of fascination : snake charming ; anecdotes ; man charming ; nervous vapor ; charming of men ; man can fascinate the lower animals ; the lower animals can fascinate man ; young persons sleeping with old ; schoolmasters ; savage nations ; lower animals ; poetry.

CONVERSATION II.

Discovery of Fascination.—Locality of heaven ; material world contained in the spiritual ; idolatry ; discovery of fascination after the deluge ; cases of cure ; life principle ; matter governed by laws of its own ; vegetable kingdom.

CONVERSATION III.

Physiology.—That man has two lives may be deduced from the narrative of his creation ; seven properties of the living principle explained ; illustrations ; human understanding ; the soul ; modelling of bone ; nervous system.

CONVERSATION IV.

Double Life of Man.—Nerves of animal and vegetable life ; heat insensible ; separation af the two lives ; phrenology ; seat of the soul ; two brains ; organs of animal life double ; insanity ; sleep ; sight without the eye ; hearing without the ear ; nervous vapor the fluid used in fascination ; six stages of fascination ; first stage ; danger ; warnings ; second and third stages ; fourth, fifth and sixth stages.

CONVERSATION V.

Spiritual States.—Trance of William Tennant ; delirium tremens a kind of trance ; Mormonism ; Clairvoyance of Swedenborg, and his communication with the spiritual world ; shape of the life power ; amputated limbs.

CONVERSATION VI.

Stages in dieing.—Death is the sixth stage of fanaticism ; no pain in dieing ; illustrations ; Dr. Adam Clark ; account of hanging ; decomposition the only sure mark of death ; premature interments ; theories in regard to the broin ; Materialism ; death bed scenes ; opening of the spiritual sight ; difierence between really dieing and only thinking ourselves dieing : illustrative cases.

CONVERSATION VII.

Operation of Medicine.—Purifying the blood ; Constables in the body ; Anatomy ; Physiology ; Pathology ; operation of medicine well known ; arsenic ; how to discover aiterations in the life power ; illustration ; active plan of treatment ; expectant plan of treatment ; fascination inducing disease ; explanation of the water cure ; homœpathy ; our bodies change every seven years ; vaccination.

CONVERSATION VIII.

Prevision.—Faculty of prevision ; organic prevision ; revealed prevision ; medical practice ; case of Socrates.

CONVERSATION IX.

Somnambulism.—Philosophy of mystery ; Somnambulism ; source of life ; pain in surgical operations ; somnambulism rescues fascination from the imputations of sorcery and the black art ; performing dreams ; Professor Upham ; Captain Brown ; Mr. John Wise ; somnambulism induced by disease ; somnambulism induced by medicinal agents.

CONVERSATION X.

History of Fascination.—History of fascination ; Mesmer ; fascination a key to the various superstitions of the world ; directions for operating in fascination ; alarming symptoms should not disconcert the operator ; illustrations ; the object of fascination curative ; Newnham ; Deleuze ; conclusion.

APPENDIX.

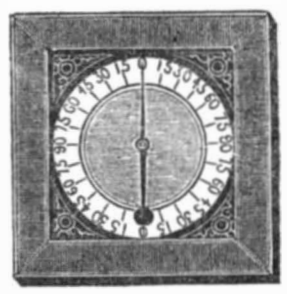
Letter from Rev. W. H. Beecher, attesting the reality of fascination, clairvoyance, &c.

This work is illustrated by numerous engravings adapted to the subject, also a beautiful portrait of the author, who has written several works on Natural History, Physiology, Botany, &c. It may be ordered and received by return of the first mail, by enclosing the amount (50 cents) in a letter and remitting post paid, to

MUNN & CO., 128 Fulton Street, New York.

☞ The work will be forwarded free of Postage.

Plumb and Level Indicator.



THE UTILITY of this invention so far exceeds the expectation of the inventor that he has been induced to engage in the manufacture of them to a large extent. It is understood from the engraving, that the proper position of the instrument is vertical, and that the weight of the ball will keep the index in a perpendicular position, so that either the bottom or side of the frame being placed against a horizontal, vertical or oblique surface, the index will show its inclination, (if there be any) in degrees.

Besides its utility, the Indicator possesses a share of elegance, consisting of a neat mahogany frame 9 inches square and glass, encasing a lithographic dial with an appropriate picture in the centre, and the movement is so free that a variation of one fourth of a degree is indicated. They may be sent to any part of the U. S. by Express.

For sale, wholesale and retail, at this office. Address MUNN & CO (post paid) ☞Price $1 single. A discount to dealers. m13tf

SQUIRE & BROTHER,

182 Bowery (a few doors from Spring St.) and 97 Fulton Street.

Watches, Jewelry and Silver Ware.

GOLD PATENT LEVER WATCHES, full jewelled, by Beesely, Tobias, and other celebrated makers.

Gold detached Lever Watches, in most beautiful cases. Gold Lepine and Silver Watches of all kinds.

Gold chains, new patterns ; Gold Fob and Vest chains. Gold Bracelets of the latest fashions.

Gold Pins, set with coral, cameo and stone.

Gold Ear-rings, the new styles, which are so fashionable.

Gold Pencils and Gold Pens, as cheap as the cheapest. Gold Spectacles and Eye Glasses, perifocal, concave and convex.

Silver Ware, Spoons, Forks, Knives and Tea Setts, of all late patterns

We do pride ourselves on our silver, as regards price, pattern and quality, for it is of the standard of dollars.

Dixon & Sons Silver Plated Ware, and their celebrated Britannia Tea Sett, which comes so very low.

Please call and judge for yourselves ; for we do not expect you to purchase unless we can make it for your interest.

All goods sold, warranted as represented. Should they prove otherwise, the money will be refunded.

☞A Gold Medal was awarded us at the last Fair. We have adopted the cash system and no deviation from the first price. B. S. SQUIRE, Jr.

S. P. SQUIRE.

j13 4t* 182 Bowery, New York.

Lap-welded Wrought Iron Tubes

FOR TUBULAR BOILERS,

From 1 1-4 to 6 inches diameter, and any length, not exceeding 17 feet.

THESE Tubes are of the same quality and manufacture as those extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER, Patentee,

d26 28 Platt street, New York.

AGRICULTURAL TOOLS.

INVENTORS and Makers of superior Agricultural implements are notified that the subscriber will sell such articles on commission, and make prompt returns. SAMUEL C. HILLS,

m8 3m* 189 Water st.

The Cheapest and most Popular Temperance and Family Journal in the United States.

PROSPECTUS FOR THE SEVENTH VOLUME OF

The New York Organ.

To commence July 3, 1847.

Published every Saturday in the City of New York, by

OLIVER & BROTHER, PRINTERS.

THE ORGAN is neatly printed in a large quarto form, suitable for binding. It contains 8 pages of 4 columns each, making 32 columns. Under the heads of CHOICE LITERATURE, LADIES DEPARTMENT, MIRROR OF THE TIMES, NEWS, CHRONICLES OF DRUNKENNESS, SONS OF TEMPERANCE, THE WASHINGTONIANS, WIT and PLEASANTRY, &c., is weekly presented a variety of carefully prepared matter which may be read with interest and profit in every FAMILY CIRCLE. We are also publishing two pieces of MUSIC with Temperance Odes, monthly.

The Publishers believing that an effort to enlist the best LITERARY TALENT of the Country in the Temperance cause, would be appreciated and sustained, have completed arrangements by which they will be able to present in each number of the next volume, original articles from one or more of the following eminent writers :—Mrs. L. H. SIGOURNEY, Mrs. H. MUZZY, KATE SUTHERLAND, T. S. ARTHUR, H. HASTINGS WELD, D. C. COLESWORTHY and R. T. TRALL. We venture to assert that no similar Journal has ever concentrated such an array of talent ; and we confidently appeal to every friend of TEMPERANCE and SOUND MORALITY to assist in giving the New York Organ an extensive circulation. The very low price puts it within the reach of every reader.

TERMS.—City subscribers, one shilling a month. Country Subscribers—Single copies ONLY ONE DOLLAR a year. CLUBBING—6 copies for $5—13 copies $10 - ☞28 copies $20 ! ☞Specimen numbers sent if desired. Communications, post paid, will receive prompt attention. Address

OLIVER & BROTHER,

Printers and Publishers, corner Nassau and Fulton streets, New York. j5

NOTICE.

TO COTTON & WOOLEN MANUFACTURERS.

THE subscriber will furnish to order his Improved Cotton Willow and Wool Picker. It is warranted to do more work and much better in quality, with less outlay of power than any other machine in use, also the repairs required are much less on the machine itself and the succeeding machinery, the cotton or wool being so perfectly opened there is much less strain upon the card, clothing, &c., &c. It has been introduced into more than 60 of the best Mills in New England and quite a number of them have stated to me that they save the expense of the machine in a few months in WASTE ALONE, when much stock is used. EDMUND BACON,

Superintendant of Portsmouth, N. H.

d12 6m* Steam Mills.

PATENT AGENCY AT WASHINGTON.

ZENAS C. ROBBINS,

Mechanical Engineer and Agent for procuring Patents.

WILL prepare the necessary Drawings and Papers for applicants for Patents, and transact all other business in the line of his profession at the Patent Office. He can be consulted on all questions relating to the Patent Laws and decisions in the United States or Europe. Persons at a distance desirous of having examinations made at the Patent Office, prior to making application for a patent, may forward (post paid, enclosing a fee of five dollars) a clear statement of their case, when immediate attention will be given to it, and all the information that could be obtained by a visit of the applicant in person, promptly communicated. All letters on business must be post paid, and contain a suitable fee, where a written opinion is required.

Office on F street opposite Patent Office.

He has the honor of referring, by permission, to Hon. Edmund Burke, Com. of Patents ; Hon. H. L Ellsworth, late do ; H. Knowles, Machinist, Patent Office ; Judge Cranch, Washington, D. C. ; Hon. R. Choate, Mass., U. S. Senate ; Hon. W. Allen, Ohio, do; Hon. J. B. Bowlin, M. C. Missouri ; Hon. Willis Hall, New York ; Hon. Robert Smith, M. C. Illinois ; Hon. S. Breese, U. S. Senate ; Hon. J. H. Relfe, M. C. Missouri ; Capt. H. M. Shreve, Missouri. j23

© 1847 SCIENTIFIC AMERICIAN, INC

THE ART OF PAINTING.

(*Continued from No.* 38.)

PORTRAIT PAINTING.

Most portrait painters procure their colors in a dry state, and grind them in small quantities as they have occasion to use them; but a great variety of colors are kept ready ground, and put up in metallic tubes at the artist's finding stores. Linseed oil is the medium in which colors for this purpose are ground; but the colors are usually diluted with spirits of turpentine and tempered with a little japan or other drying ingredient. With regard to the requisite brushes and pencils, the best way is to provide a full variety, and use such as are found most convenient. The brushes and pencils may be kept in good order by being suspended, the points downward, in a vessel of linseed oil, but without reaching the bottom. Portraits are usually painted on twilled cotton cloth, stretched on suitable frames, and painted of a stone color—that is, a mixture of white lead, yellow ochre and black. A painted board will answer every purpose for a learner or amateur. A room for this purpose should have but one window open, and that elevated. The artist seats himself with his back to the light, and his subject before him, with the face inclined a little to the right. He first makes a sketch of the outlines and features, with a fine chalk pencil, rubbing out and correcting, until he is satisfied with the form and proportions. In this process we should recommend that the learner commence at the top of the head, and extend the line both ways as low as the ears; observe the distance from the top of the head to the top of the forehead, and sketch the hair over the forehead on the right side; extend the line from the top of the forehead down the right side to the eyebrow; then sketch the eye brow, and extend the line down the right side of the nose, and sketch the end of the nose with the nostrils; then draw the right eye, and then the left,—measure well with your eye the distance between the two eyes, and form the left eyebrow; extend the outline from the right eyebrow to the chin, and thence to the left ear —draw the ear and the hair on the left side.—Draw the centre shade on the upper lip, to the mouth, and the shade on the right of the centre; sketch the mouth, observing attentively the form and extent of the upper lip, and the position of the terminations of the mouth, relative to the nose, or to supposed lines descending perpendicularly from the sides of the nose; sketch the shade under the mouth, and proceed to draw the coat-collar, shoulders, vest, and cravat. Paint several parts between the outlines, with colors similar to those eventually intended. The proper ground for the flesh color is a nuetral tint, composed of white lead, colored several shades with a mixture of blue, yellow and red; but it is better to apply in the first instance, colors as near as possible to what is expected to be required in finishing, applying light colors where light is required, and darker colors on the shaded parts, strengthening the outlines with dark colors — It is better, however, to paint too dark than to light. The adaptation of the shading to the complexion must depend on sight and judgment, as no rules can be given; though it may be remarked that the best artists use a larger proportion of green and less of red, in shading the face, than the less accomplished. The foregoing directions are, in some respects, peculiarly applicable to the portraits of gentlemen. The proper position for ladies, while sitting for a portrait, inclines a little to the left, and consequently, in the process of drawing the outlines, preference is given to the left side, instead of the right, as in the case of gentlemen. In either and all cases, when the first coloring is dry, the whole face is required to be painted over again, still reserving the lightest and brightest touches to the final finishing; though it may be supposed that a *perfect* artist would, in all cases, apply the right colors at first, and thus perfect the work with a single coat.

MINIATURE PAINTING.

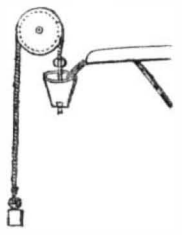
The paints used in this branch, are the prepared cakes, called *water colors*, and which may be procured at stationer's shops in general. Those manufactured by Reeves, of London, are in most general use, though those prepared by Osborne, of Philadelphia, are softer and, in some respects, preferable. These colors being dissolved in water, are applied with small and delicate camel hair pencils. It is a common custom to dip the pencil in water, and brush it on the cake, until a sufficient quantity of the color is dissolved and mixed with the water, for that immediate occasion; but this process is tedious and takes up much time.—A better way for the practitioner to furnish himself with a series of small cups in which to dissolve small quantities of the paints, and thus keep them in a state ready for use. A dozen or more concavities, half an inch deep and five-eights of an inch in diameter, cut or formed in the side of a piece of pine board, being well coated with white oil paint, and dried, answers well for this purpose. The materials used as the ground for this painting, are thin plates of ivory, or a thick smooth kind of paper termed "Bristol board." The process of drawing the outlines is the same as described in portrait painting, only that for this purpose, a fine, hard and sharp-pointed lead pencil is used, and erroneous lines are erased occasionally with india rubber. Having effected the outlines, if on paper, retrace the same with dilute colors, using for this purpose a fine pointed hair pencil. The outlines of the features may be traced with lake; those of the hair, with burnt umber, and the drapery with blue and black, more or less dense or dilute according to the depth of color or shade intended. Then rub off the lead pencil lines, and proceed to color the whole face, with dilute venitian red, laying it smooth and uniformly. Color the hair with a mixture of burnt and black umber, in proportion to suit, and more or less dilute, with the occasional addition of venitian red, if the hair is of sandy or red color; or yellow ochre if the subject is young and the hair very light. Apply the ground color for the coat, vest, and cravat, nearly as dark as eventually intended. Either black, blue, or green, for the coloring of the coat, should be mixed with white, and applied in a full opaque body. For all other parts, the colors are worked transparently. Proceed to shade the face and features with a *neutral tint*, composed of Prussian blue, lake, and gamboge, in such proportions as will suit the complexion. A mixture of carmine and vermillion is generally used for coloring the cheeks of beautiful faces, and this must be applied by a slow and careful process. Shade the white part of the drapery and of the eyes, with a *neutral shade*, composed of black, blue, lake, and yellow ochre, in such proportions as to resemble, by comparison, the shades of white muslin. In finishing the face and hair, the light parts must be preserved, for white paint must not be used, except to produce some small specs representing the reflection of light from the eyes, or from jewelry. If the colors chance to be too dark, they may be washed off, in part, with a hair pencil and pure water —but such occasions should be avoided. In painting on ivory, the process is similar, but more slow and delicate. The artist may sometimes take advantage of the semi-transparency of the ivory, however, and improve the complexion, by applying such colors to the back of the plate, as will produce the desired effect in front In the application of the various tints, the artist must apply the colors in such delicate touches of the pencil, that the prints of the brush may not be discovered, but that the colors may appear perfectly blended and the surface smooth. This painting, when properly executed, is much brighter in appearance, and much more durable, than the best oil painting, but should be carefully preserved under a glas to prevent its becoming soiled, as it will not bear washing without injury.

(*To be continued.*)

Method of supporting Trees.

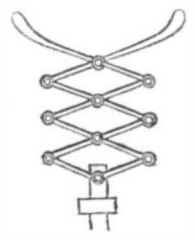
The branches of trees when loaded with fruit, may be kept from breaking in the following manner: Connect with cords all the heaviest branches, commencing with the lower ones, and fasten the ends to the upper part of the trunk. Branches when thus secured together cannot break. This plan is far superior to the old method of props.

MECHANICAL MOVEMENTS.



The above cut shows a simple original method of reciprocating motion, whereby a bucket is drawn up to the spout of water by the weight which is attached to one end of the rope. By the bucket gradually filling with water, it becomes heavier than the weight on the rope and descends to the ground which drives up the light plug valve and empties the bucket, which rises again by the action of the counter weight on the other side of the pulley over which it is suspended.

Rectilinear Motion.



This motion is exemplified by the above cut in a combination of levers, whereby at right angles it may be transferred as in the case of stampers, but in the most beautiful and ingenious manner, as applied by James Watt to the piston of his engine. The above cut exhibits the action of what was called the spring pole which was used for pounding various substances, the springs of the levers giving great ease and force to the parallel action. The application of the complex levers by Watt to the piston of his engine, would require some mathematical demonstration, which is not our object in these beautiful but simple mechanical movements. It will be easily seen that by the flexibility of the levers rectilinear motion is wonderfully transferred from the centres of the combination to the object to which they are attached and might be applied by almost any man and very usefully by Cloth Pounders who do business on a small scale and do all their work by hand.

Lacquer for Brass.

Dissolve one ounce of seedlac, and half an ounce of stick-lac in a quart of the best alcohol. For this purpose the seedlac should be first pulverized, and being well mixed with the alcohol, the whole, including the stick-lac, may be put into a glass bottle or flask, and suspended near a fire, or set on a stove where it will be kept warm for 24 hours, during which time it may be occasionally shaken, or stirred up with a rod. Afterward the solution may be strained through a close flannel, when it will be ready for use. The stick-lac may be omitted, unless an orange tinge is required; or a little of the tincture of red saunders may be substituted in place of it. When this is applied, the work must be warmed as much as the hand can bear, and the lacquer is to be quickly laid on, with a camel-hair brush.

To Give Tin the Whiteness and Brilliancy of Silver.

To an ounce of nitric acid, diluted with an equal quantity of water, add nearly one ounce of mercury, or as much as the acid will dissolve. When this is dissolved, add to the solution gradually, half an ounce of sulphuric acid; this will precipitate the mercury in the form of a white powder; when this has subsided, pour off the acid and add clear water; thus wash the powder from the acid, then pour off the water, and while the precipitate is moist (or if it be suffered to dry, it may be again moistened with water,) rub it over the tin with a piece of glove leather. Then wash the tin with water, and when it is dry, rub it pretty hard with a piece of fine woollen cloth; it will then resemble polished silver.

India Rubber Arm.

A mechanic in Philadelphia has invented an India Rubber arm, which weighs but little over a pound, for the benefit of those who have been obliged to submit to amputation.

A Natural Æolian Lyre.

Near Fryberg, in Baden, there is a chasm in a remarkable mountain, which from the extraordinary sounds which occasionally issue from it, has been long the wonder of the simple people in the neighborhood and is the source of much spiritual fancy. Melodious sounds issue from the tops of the fir trees, which crown the rocky heights in the neighborhood of a lovely cascade. The current of air ascending and descending through the chasm receives a counter impulse from an abrupt angle of a rock which acting on the tops of the trees form a natural Eolian harp, the tones of which blend with the gurgling waterfall in thrilling song, wild as the waters and the wandering winds.

The Atmosphere.

The atmosphere is composed of nitrogen 4o, oxygen 1. Laughing gas, is composed of nitrogen 2 oxygen 1. Aquafortis is composed of nitrogen 2, oxygen 5. What a small cause would change our atmosphere into a deadly poison. Epidemics which so often occur in different parts of the world, can thus easily be accounted for. How inscrutably wise is that Being, who by the same elements can create and destroy

Something New.

A ring of zinc and one of copper, placed in contact around either fruit or ornamental trees, will prevent any insects from ascending and injuring them. The moment the insect touches the battery, it receives a galvanic shock, and is killed, or falls to the ground. The action of the battery is unceasing, being sufficiently powerful in either dry or wet weather. So says the Macon Journal.

THE NEW YORK
SCIENTIFIC AMERICAN:

Published Weekly at 128 *Fulton Street., (Sun Building,) New York, and No.* 13 *Court Street, Boston; the principal office being at New York.*

BY MUNN & COMPANY.

The SCIENTIFIC AMERICAN is the Advocate of Industry and Journal of Mechanica. and other Improvements: as such its contents are probably more varied and interesting, than those of any other weekly newspaper in the United States, and certainly more useful. It contains as much interesting Intelligence as six ordinary daily papers, while for *real benefit*, it is unequalled by any thing yet published Each number regularly contains from THREE to SIX ORIGINAL ENGRAVINGS, illustrated by NEW INVENTIONS, American and Foreign,—SCIENTIFIC PRINCIPLES and CURIOSITIES,—Notices of the progress of Mechanical and other Scientific Improvements Scientific Essays on the principles of the Sciences of MECHANICS, CHEMISTRY and ARCHITECTURE,—Catalogues of American Patents,—INSTRUCTION in various ARTS and TRADES, *with engravings*,—Curious Philosophical Experiments,—the latest RAIL ROAD INTELLIGENCE in EUROPE and AMERICA,—Valuable information on the Art of GARDENING, &c. &c.

This paper is especially entitled to the patronage of MECHANICS and MANUFACTURERS, being devoted to the interests of those classes. It is particularly useful to FARMERS, as it will not only apprise them of IMPROVEMENTS in AGRICULTURAL IMPLEMENTS, but INSTRUCT them in various MECHANICAL TRADES, and guard against impositions. As a FAMILY NEWSPAPER it will convey more USEFUL Intelligence t children and young people, than five times its cost in school instruction.

Being published in QUARTO FORM, it is conveniently adapted to PRESERVATION and BINDING.

TERMS.—The Scientific American is sent to subscribers in the country at the rate of $2 a year, ONE DOLLAR IN ADVANCE, the remainder in 6 months. Persons desiring to subscribe, have only to enclose the amount in a letter, directed to

MUNN & COMPANY,

Publishers of the Scientific American, New York.

☞ Specimen copies sent when desired. All Letters must be POST PAID.

© 1847 SCIENTIFIC AMERICIAN, INC